

MAY 5, 1958

STEEL

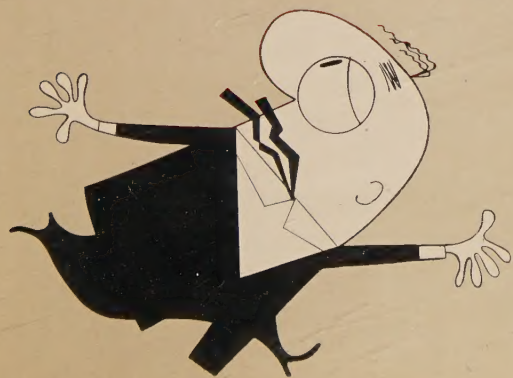
The
Metalworking Weekly

A PENTON PUBLICATION

MSD-S LIBRARY

How To Control Fringe Benefit Costs

Page . . . 62



- ✓ Preview of Space Age Metals . . . Page 86
- ✓ Metal Stocks: O.K. by Summer...Page 125

CONTENTS — PAGE 5

it's mainly a matter of **TIMING!**

The net cost of replacing a machine depends on WHEN you do it

THERE'S A TIME to buy and a time to sell. A time to invest and a time to "sit tight." And a time when you *should* replace an old machine with a new one.

Actually, timing is the most important factor in any replacement program. For there is one precisely predictable time when the replacement of any machine will work out to your best advantage—productionwise and investmentwise. Too soon is just as bad as too late. Either way you *lose money!*

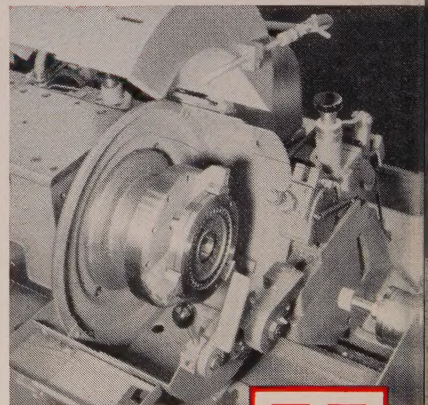
Unless you can afford a loss—and it could be substantial—don't trust intuition or rule-of-thumb computations to determine when a machine should be replaced.

There are many variables involved, they can all be expressed in dollars and cents. And correct timing then becomes a matter of simple arithmetic.

Our sales engineers are well experienced in making obsolescence studies, determining the proper replacement timing. If you'd like some expert assistance in planning your replacement program or want to confirm your own calculations on a particular machine, just call in your Heald engineer. He will be glad to make a replacement analysis, without obligation of course. Similar studies by Heald engineers have pointed the way to many important savings.

For Example: A large machinery manufacturer was using an old Model 72A Heald Internal to grind the bore and adjacent face of steel countershaft gears. A cost analysis revealed that by replacing this with a new Model 271 Size-Matic, substantial savings could be made. The new machine, shown at the right, was installed with the following results.

	ANNUAL COSTS	
	Old Machine	New Machine
Direct Labor	\$13,299.00	\$ 5,079.00
Power Consumption	427.00	182.00
Property Taxes & Insurance	45.00	552.00
Normal Maintenance	841.00	500.00
Restorative Repairs, Old Mach.	4,066.00	....
Capital Investment, New Mach.	....	6,256.00
Total Cost Per Year	\$18,678.00	\$12,569.00
Annual Saving, New Machine.....		\$ 6,109.00



YOU pay for obsolescence. Replacement pays for itself!

THE HEALD MACHINE COMPANY

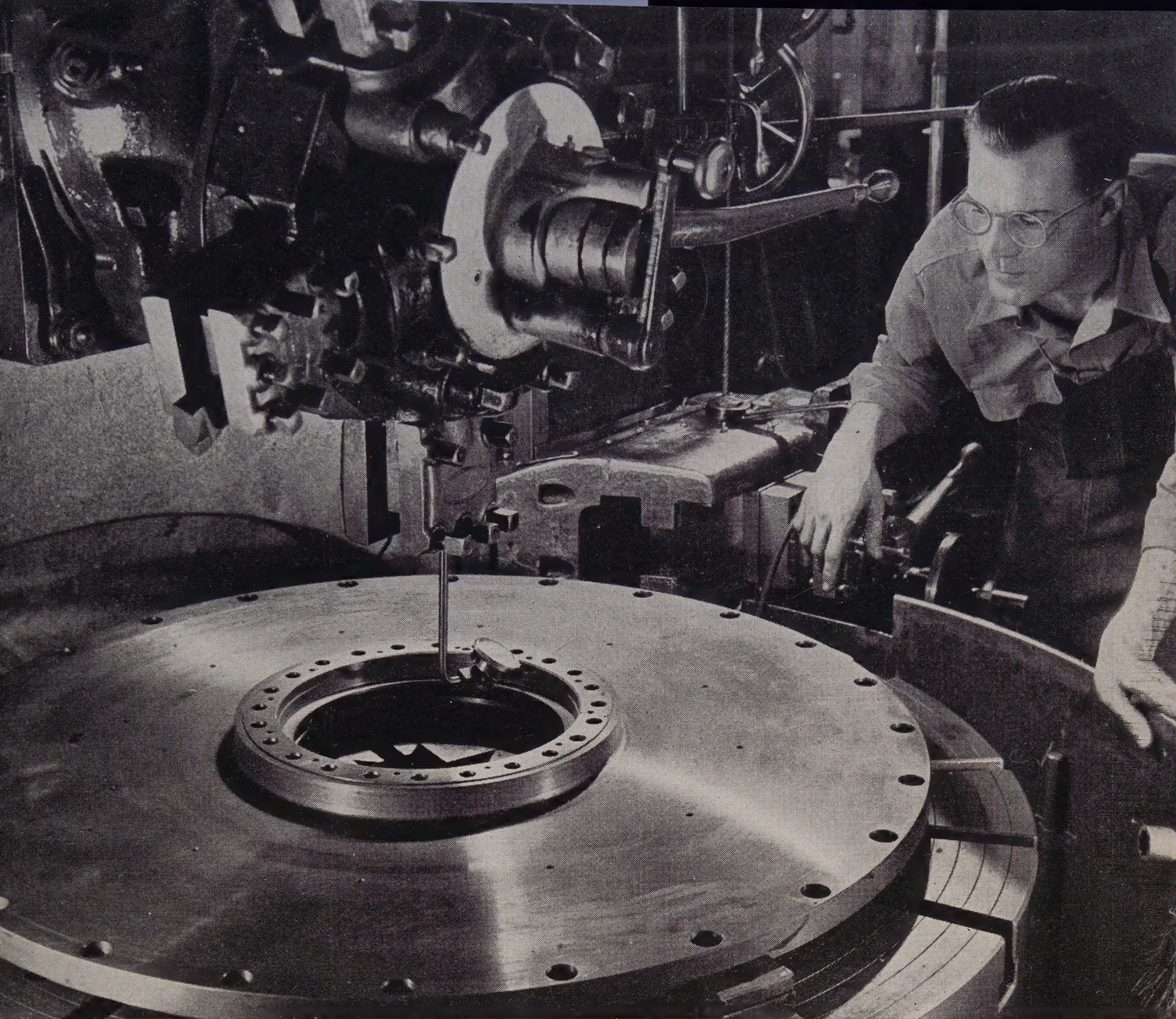
Subsidiary of The Cincinnati Milling Machine Co.

Worcester 6, Massachusetts

Chicago • Cleveland • Dayton • Detroit • Indianapolis • New York



NO. 5
495 YDS. PAR 5



The Most Important Difference is Down Inside

Differences *do* exist in circular steel blanks. We don't mean variations in size, thickness, etc.; we mean the differences in quality that are rarely apparent from mere surface inspection.

For years Bethlehem has made circular blanks by a method that both *forges* and *rolls* the steel in a single operation. Is this of any interest to the user? Does it bring about differences that are really important?

The answer is a big, emphatic yes! Bethlehem's unique method of manufacture insures such advantages as soundness, excellent grain flow, and very high strength. Because of these characteristics, the machinist can always do his job with complete confidence; there are no hidden flaws to snag the cutting tool, slow the work, or cause rejections.

If you build machinery that requires circular steel parts, especially parts for heavy-duty service, we strongly recommend Bethlehem blanks. They are suitable for such a long list of applications—flywheels, sheave and crane wheels, gears, turbine rotors, clutch drums, brake wheels, and many others. The blanks range in size from 10 to 46 in. OD, and they can be furnished heat-treated or untreated. Prices are fully competitive.

Write for a free copy of Booklet 216. Its numerous pictures and clearly written text will answer many questions that may occur to you.

BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.

On the Pacific Coast Bethlehem products are sold by
Bethlehem Pacific Coast Steel Corporation. Export
Distributor: Bethlehem Steel Export Corporation

BETHLEHEM STEEL



Ford Motor Co. installs **AMERICAN MONORAIL** in one of . . .

WORLD'S BIGGEST CHROME PLATING PLANTS

Ford Motor Co. has installed an American Monorail system almost 9/10 of a mile long with 4 automatic track switches and 16 automatic lift or dip sections in the track. It serves two Udylite automatic plating machines, each of which is approximately 750 feet long.

A 3-ton Monorail system feeds carriers loaded with Ford bumpers into each plating machine and removes the carriers at the finished end.

Everything is automatic with provision for manual control at critical points.

This is another typical example of cooperation between Monorail, Udylite, and Ford engineers.

AMERICAN MONORAIL

KEEP DOORS CLOSED
WHEN PLANT IS IN
OPERATION

AMERICAN MONORAIL



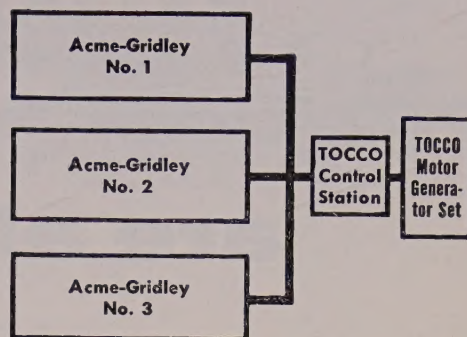
ENGINEERED MATERIALS HANDLING

OVERHEAD
HANDLING
EQUIPMENT

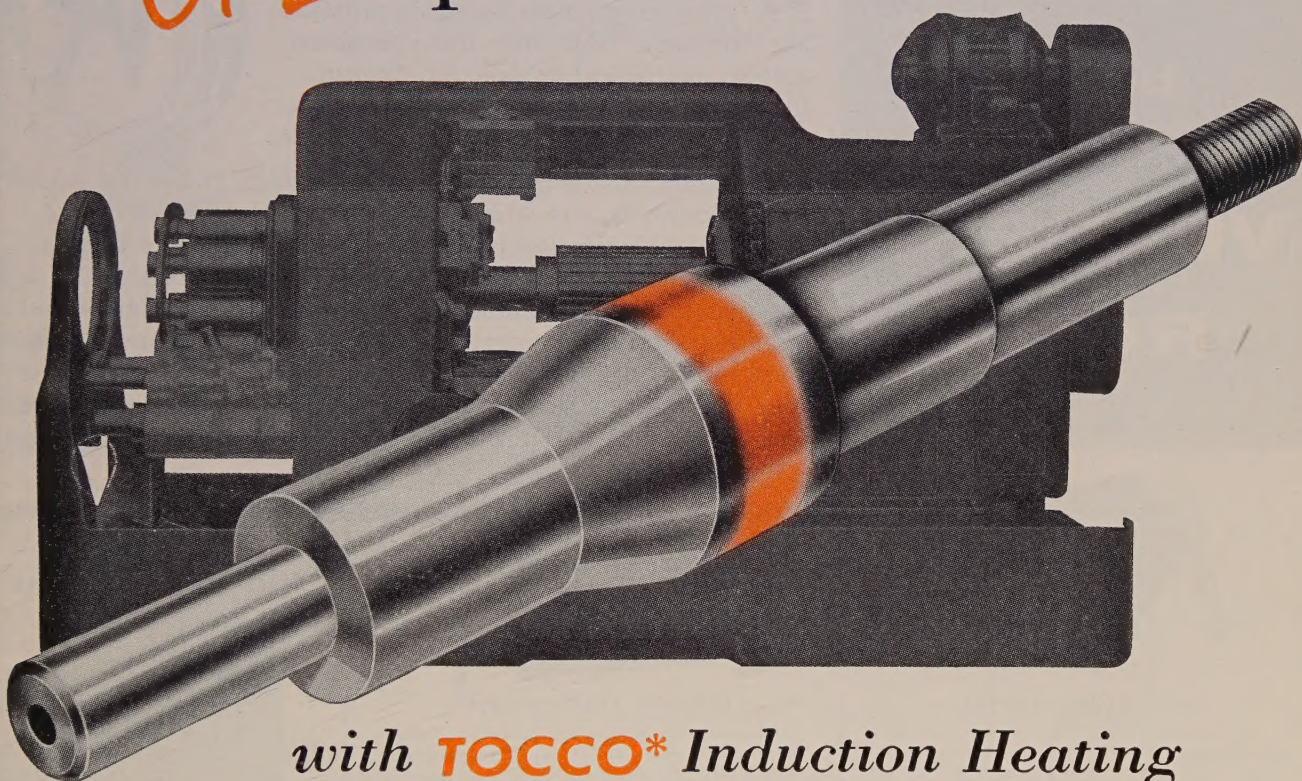
13102 ATHENS AVENUE
CLEVELAND 7, OHIO

MEMBER OF MATERIAL HANDLING INSTITUTE AND MONORAIL MANUFACTURERS ASSOCIATION

Pump Shafts Machined and Hardened in **ONE** operation...



Plan view of TOCCO-equipped automatic screw machine installation for hardening collars on vane pump shafts.



with **TOCCO*** Induction Heating

TOCCO-equipped 8-spindle Acme-Gridley Screw Machines at a large automotive manufacturer's plant produce vane pump shafts for power steering units in one completely automatic operation! The hardening and metal-working operations are combined on the same machine.* No additional handling—no hardening cost except power!

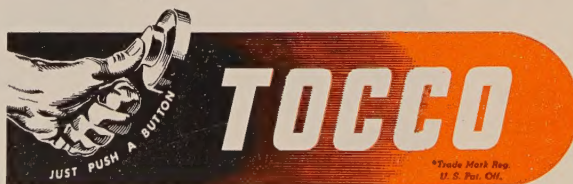
A TOCCO inductor, mounted at one station of each automatic, hardens collars on pump shafts after they have been completely machined at preceding stations on the same machine. Each installation consists of 3 automatic machines equipped with inductor coils powered by a 50 KW, 10,000 cycle TOCCO unit. Production from each installation is 360 shafts per hr.

Shafts are made of C 1144 and only the collar is hardened to prevent scoring the seal. TOCCO's rapid heating confines the hardened area to the surface of the collar leaving the rest of the shaft unaffected.

If your products or their components require heat treating, soldering, brazing or heating for forging, it

will pay you to investigate TOCCO for better, faster production at lower unit costs.

*A Patented Process



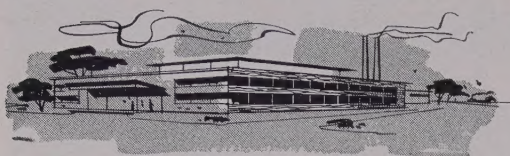
THE OHIO CRANKSHAFT COMPANY

Mail Coupon Today—**NEW FREE Bulletin**

The Ohio Crankshaft Co. • Dept. S-5, Cleveland 5, Ohio

Please send copy of "Typical Results of TOCCO Induction Hardening and Heat Treating."

Name _____
Position _____
Company _____
Address _____
City _____ Zone _____ State _____



No Two Plants

are alike...

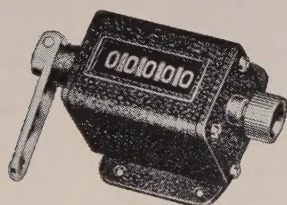


but all
can count on
VEEDER-ROOT

Sure, everybody's manufacturing problems are "different." But when these problems involve mechanical or electrical *Control*, they can *all* get the right answer from the same man . . . the Veeder-Root Distributor.

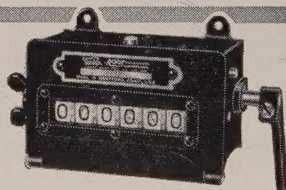


You will find that this man is tops in his field. He knows industry, and he knows how to adapt and apply standard Veeder-Root Counters to all types of production machines and processes, to give you exactly the facts-in-figures you need. If it's a question of quality, volume, cost inventory, production, wage or incentive payment, remember that *you're never sure unless you count*. And remember that the man you can always count on is your Veeder-Root Distributor. If you don't know who he is, just drop a line to D. G. Dresser, Veeder-Root Inc., Hartford 2, Conn.



SMALL RESET COUNTER

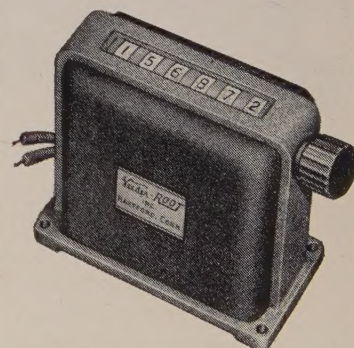
A compact, rugged reset counter for moderate duty in parts inspection, quality control, conveyors, machine tools, light presses, etc. Dimensions: $1\frac{1}{4}$ " long, $1\frac{1}{4}$ " high, $1\frac{1}{16}$ " wide. Speed: Up to 1000 counts per minute.



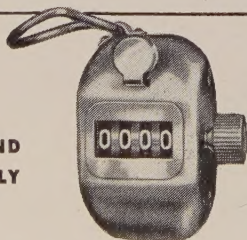
BOX-TYPE RESET COUNTER

For punch press installations, conveyors, metal-working equipment, die casting, plastic-molding, rivet, spring and wire machining, or any installation requiring a heavy duty counter. Dimensions: $4\frac{1}{4}$ " long, $2\frac{5}{32}$ " high, $3\frac{3}{8}$ " wide. Speed: 500 counts per minute.

RESET MAGNETIC COUNTER

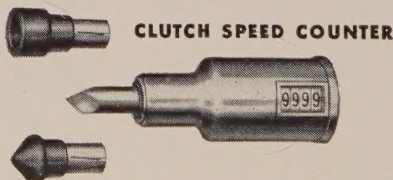


For remote indication of machine operation from plant to office. Dimensions: $3\frac{15}{16}$ " long, $2\frac{1}{2}$ " high, $1\frac{1}{8}$ " wide. Speed: Up to 1000 counts per minute. Coils: 110V-AC are standard. Other voltages are available. Panel mounting feature also available.



HAND TALLY

For quick spot-checks of production or performance. Dimensions: $1\frac{17}{64}$ " long (to end of reset knob), $1\frac{3}{4}$ " deep, 2" high. Counts one for each depression of the thumb lever, and resets to zero by a turn of the knob.



CLUTCH SPEED COUNTER

For checking to make sure that the machine is operating at the required R.P.M. Dimensions: $3\frac{1}{4}$ " long, $\frac{7}{8}$ " max. diameter. Non-Reset. Internal clutch operates counter only when rubber tip is pressed against the shaft.

Everyone can count on
VEEDER-ROOT
"The Name that Counts"



Hartford, Conn. • Greenville, S. C.
Chicago • New York • Los Angeles
San Francisco • Montreal
Offices and Agents in Principal Cities

EDITORIAL 45

Archaic U. S. depreciation policy threatens maintenance of industrial supremacy. Foreign countries far ahead.

SPECIAL FEATURE 62



Check Your Fringe Costs—If you don't, you may find yourself snowed under. Conceived as emergency aid, fringes have already snowballed into a multibillion dollar industrial way of life.

WINDOWS OF WASHINGTON 58

Don't be misled by "Army vs. Navy" headlines on long range space programs. Look behind them for company positions to decide how your firm best fits into the new defense look.

MIRRORS OF MOTORDOM 65

New models will come early if: 1. Tooling is on time. 2. Sales trends demand it. 3. It will help 1960 plans.

THE BUSINESS TREND 69

Appliance makers launch "Buy It Now" campaign to try to keep uptrend in orders going.

WHERE TO FIND—

Behind the Scenes	6
Letters to the Editors	10
Editorial & Business Staffs ..	16
Calendar of Meetings	23
Men of Industry	73
New Products	111
New Literature	121
Advertising Index	153

Business—

METALWORKING OUTLOOK 45

✓ First Quarter Profits Skid—Outlook still dim	51
UAW's Hitch: A Stall or Face Saver?	52
Shipbuilding Runs Aground?—Losses in orders cause concern ..	53
Watch the West Coast—It is a "growth" area	54
Seaton's Plan for Metals—Chances for passage are slim	55
STEEL Goes to Europe—West Germany	56
Inventories: Recovery's Key—Steel executive gives advice	57
1965 Strikes in '57—Metalworking industries hardest hit	61
✓ Check Your Fringe Costs—Already high, they'll go higher	62
Steel Firm Expands—Granite City completes major project	79

Production—

TECHNICAL OUTLOOK 83

✓ Boost Your Machining Speeds—It can help beat cost crisis	84
✓ Preview of Space Age Metals—Data gathered from 31 firms	86
Extrusion Slashes Turbine Wheel Assembly Costs at Ford	88
Steel Pails Are Stretched to Shape—Roundness is insured	90
Progress in Steelmaking—Balance of Steel Power Shifts	92
Machine Topics—Barriers to Faster Cutting	100
✓ Plating Helps Titanium—It covers up some shortcomings	102
How To Weld Copper and Its Alloys (Part Four)	106
Press for Precise Assembly—Locks piston rods in place	108

Markets—

MARKET OUTLOOK 123

✓ Buyers Say: "We'll Cut Stocks Further"—Quarterly survey	125
Sluggishness Pushes Scrap Down	144
Nonferrous Metals—First Quarter Profits Off	148

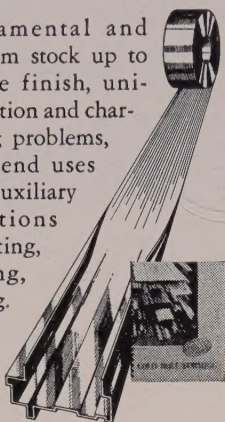
STEEL, the metalworking weekly, is selectively distributed without charge to qualified management personnel with administrative, production, engineering, or purchasing functions in U. S. metalworking plants employing 20 or more. Those unable to qualify, or those wishing home delivered copies, may purchase copies at these rates: U. S. and possessions and Canada, \$10 a year; all other countries, \$20 a year; single copies, 50 cents. Metalworking Yearbook issue, \$2. Published every Monday and copyright 1958 by Penton Publishing Co., Penton Bldg., Cleveland 13, Ohio. Accepted as controlled circulation publication at Cleveland, Ohio

Index available semiannually. STEEL is also indexed by Engineering Index, 29 W. 39th St., New York 18, N. Y.

FREE YODER BOOKS OFFER "KNOW-HOW" on • ROLL FORMING • TUBE MAKING • SLITTING

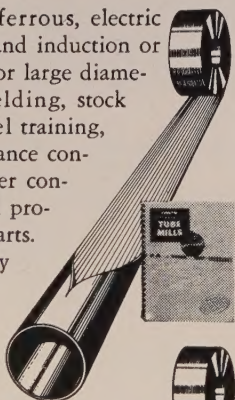
COLD-ROLL FORMING

Structural, ornamental and tubular shapes from stock up to 1/2" thick. Surface finish, uniformity, stock selection and characteristics, plating problems, production costs, end uses and applications. Auxiliary automatic operations including perforating, notching, welding, coiling, embossing. 88 pages, fully charted and illustrated.



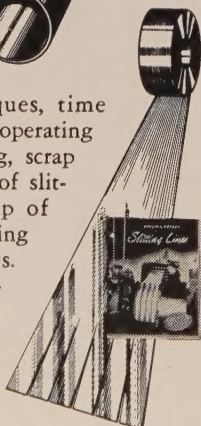
PIPE AND TUBE MAKING

Ferrous or non-ferrous, electric weld, resistance and induction or gas types. Small or large diameter. Tooling, welding, stock ranges personnel training, quality and tolerance control, speeds, power consumption, annual production rating charts. 64 pages, fully illustrated.



SLITTING

Operating techniques, time studies, analyses of operating cycles, coil handling, scrap disposal, selection of slitters and setting up of slitting lines, including coilers and recoilers. Advantages of slitting and how to compute "profit-point". 76 pages, fully illustrated.

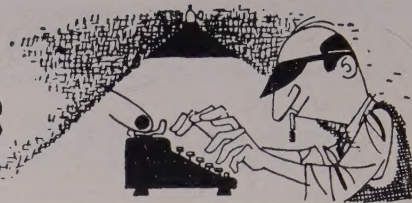


Any or all of these books are free upon requests. Send for your copies today . . . Ask for them by title.

THE YODER COMPANY
5502 Walworth Ave. • Cleveland 2, Ohio



behind the scenes



A Matter of Definition

In most dictionaries weighing more than 2 lb, it is stated definitely that steel is a commercial form of iron containing carbon in any amount up to 1.7 per cent; an increased carbon content means cast iron. Metallurgists regard this definition as stark and puissant; on it they base their contention that steel is steel, or it ain't steel. They don't mess with Mr. in-between. That is why the term "semi-steel" sits ill with them.

Wherefore, when Metallurgical Engineer Walter Carroll, Republic Steel Corp., Cleveland, read in *STEEL* (Apr. 21, p. 164) that Strategic Materials Corp. and Koppers Co. Inc., Pittsburgh, were developing a process for the direct reduction of iron ore, he grew attentive; when he encountered the statement, "... the process can make 0.5 per cent carbon semi-steel," he trembled with academic agitation.

"I suggest," he wrote, "that you explain in your typical crystal clear verbiage the meaning of 'semi-steel.'"

Wow, Mr. Carroll! That's like being invited to sweep out the corners in a roundhouse. Let us say brightly that everyone has his own loathed expressions—for example, during the late war, ours was "near miss." Obviously, a blow could only hit or miss; if it nearly missed, it means that it almost missed but didn't; therefore, it was a hit. If one pursues these ambiguous qualifiers, one could go nuts. Perhaps "semi-steel" belongs in the same category.

Weighted Mails

E. J. DeWitt, Wallace Supplies Mfg. Co., Chicago, is not satisfied with sending out ordinary form letters calling attention to his company's new flexible cutting tool, the Wallace "See-Saw." He sends out 1-in. slices of channel weighing little more than 4 lb and invites examination of the cut. The chunk that arrived in *STEEL*'s editorial offices filtered—or, rather, crashed eventually into our coop. We were impressed by the mirrorlike surfaces left by the cut; they looked as though they had been machined. The edges, too, were sharp as knives.

Mr. DeWitt is so excited over his product he is willing to slice up his current inventory of channels and send the chunks to everybody who wants visual proof of how the Wallace "See-Saw" can produce quality cuts.

At this writing, the U. S. Post Office admits that it is staggering heavily under its load. We shudder to contemplate what will happen to the service if Mr. DeWitt's promotion sweeps the country. Incidentally, what do you suppose we can do with

an 18-in. chunk of channel? On second thought, strike the question.

Information, Please

The aggregate intelligence, experience, and sagacity of the folks who read *STEEL* is beyond measuring. Moreover, it is our opinion that this formidable reservoir of brains hasn't been even partially exploited—so we aim to tap it forthwith.

For a beginning, we would like to know what *STEEL*'s Industrial Production Index figure will be for the week ending May 31. (Check the northwest corner of Page 69 for the current figure.) Associate Editor Robert Jaynes will print the answer June 9, but we want it in advance—with the 2 points beyond the decimal that Jaynes usually rounds off. For instance, it could be anywhere from 115.37 to 135.16. We'll buy a dinner for two for the reader who comes closest to the real figure. List your guess with ol' Shrdlu before May 15, lay in a supply of toothpicks, adjust your napkin, and hope for the best.

Addenda

The General Steel Castings Corp., Granite City, Ill., has grounds to believe that it is a victim of a mass attack upon its identity; we referred to it twice (Gulp!) as "Granite Steel Castings," and we submit that they have every right to tweak our big red nose. In defense, we rise to state that the fault must lie with this typewriter; on many occasions we have observed that it can't even spell.

Dr. W. K. Bock, director of research, National Malleable & Steel Castings Co., Cleveland, posted the opinion that the teasers published here are much too simple. He was kind enough to sit down and prepare one himself, and if we had a couple of extra pages at our disposal, we'd be happy to print it. It takes up about two typewritten sheets, and if anybody cares to go to the mat with it, we'll be glad to send copies.

Here's one you can do in a wink. We have in mind a five-letter word. The first letter is the first letter of a word meaning a soliloquy; the second letter is the first letter of a word meaning a path described by a heavenly body; the third letter starts a word meaning artless; the fourth starts a word meaning to obliterate; the fifth starts a word meaning to submit. At your convenience, pass the word or what it means to:

Shrdlu

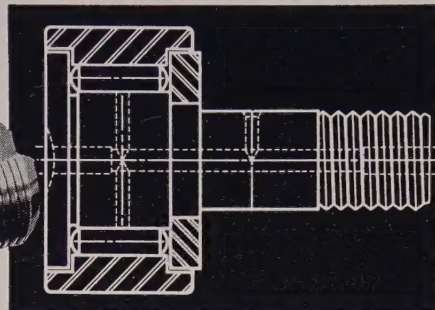
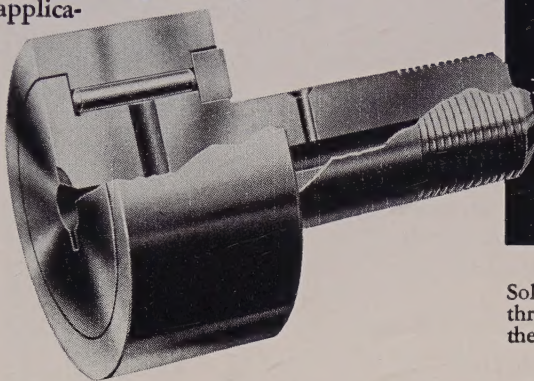
(Metalworking Outlook—Page 45)

BEARING TIPS by McGill

For convenience, with savings in time and cost

Use MCGILL[®] CAMROL Cam Followers instead of improvised units

Simplification of design with availability of a wide range of standard bearings takes the strain off engineering a cam, guide, support or track roller bearing application. No need to "build up" a special unit when you can select the proper size standard CAMROL bearing engineered especially for the job. McGill's CAMROL bearing construction offers full type capacity, with provision for shock, in a compact precision unit. Specify CAMROL, the original cam follower, in either CF (with stud) or CYR (shaft mounting) series. Sealed and prelubricated bearing available also.

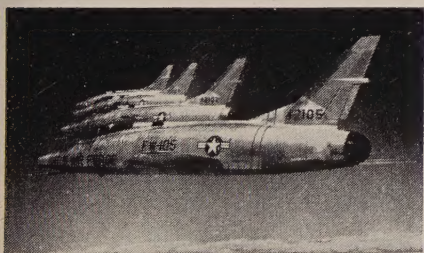


Solid construction can be lubricated through the side and the ends of the CAMROL CF stud.

YR bearings

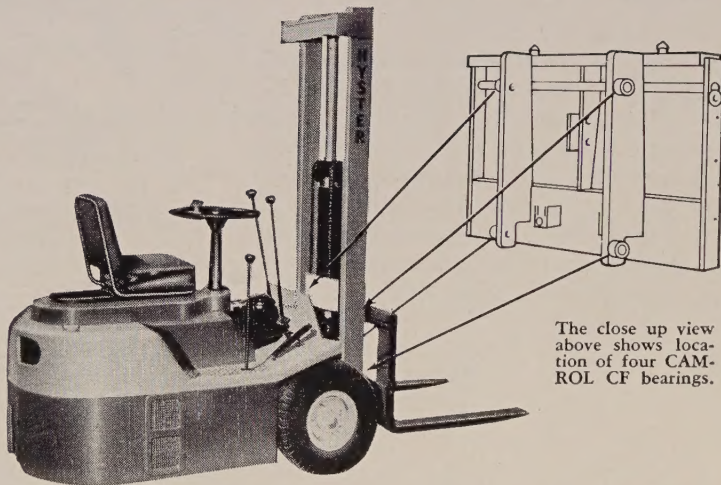
help F-100 Super Sabre make slower and safer landing

The supersonic speeds obtained by today's modern aircraft set up design problems not encountered with older, slower planes. The overall streamlined design required for speed in flight, for instance, necessitated finding ways of supporting the North American F-100 Super Sabre at low air speeds required for landing. A



series of slats on the leading edge of the wing, providing greater lift at lower air speed, was the answer. Each slat is supported by McGill CAMROL YR bearings — especially designed to permit shaft or yoke mounting. These long-life bearings carry the loads of these slats as they move on tracks during flight of the Supersonic F-100.

CAMROL[®] CF bearings out-perform friction rollers as fork support bearings



The close up view above shows location of four CAMROL CF bearings.

Small size and high load-carrying unit construction with simplified lubrication are among principal benefits obtained by Hyster Company from use of CAMROL CF bearings as fork support rollers in its Hyster 20 and other lift trucks.

Two bearings ride up and down inside each vertical mast section to position the lift truck fork under load.

Speeds are relatively slow but the crushing loads on each bearing are heavy.

In this particular application, the exterior surfaces of the bearings are treated with a black oxide finish. This provides corrosion-resistance which serves to augment maintenance-free operation, a characteristic of CAMROL bearing construction.

Fact-packed Bearing Catalog

Write for your copy of Catalog 52-A, a revised, 128-page Bearing Selection Guide.

Insure performance with MCGILL[®]

MULTIROL[®] GUIDEROL[®] CAMROL[®]
Precision Needle Bearings

MCGILL MANUFACTURING COMPANY, INC., 301 N. LAFAYETTE ST., VALPARAISO, INDIANA

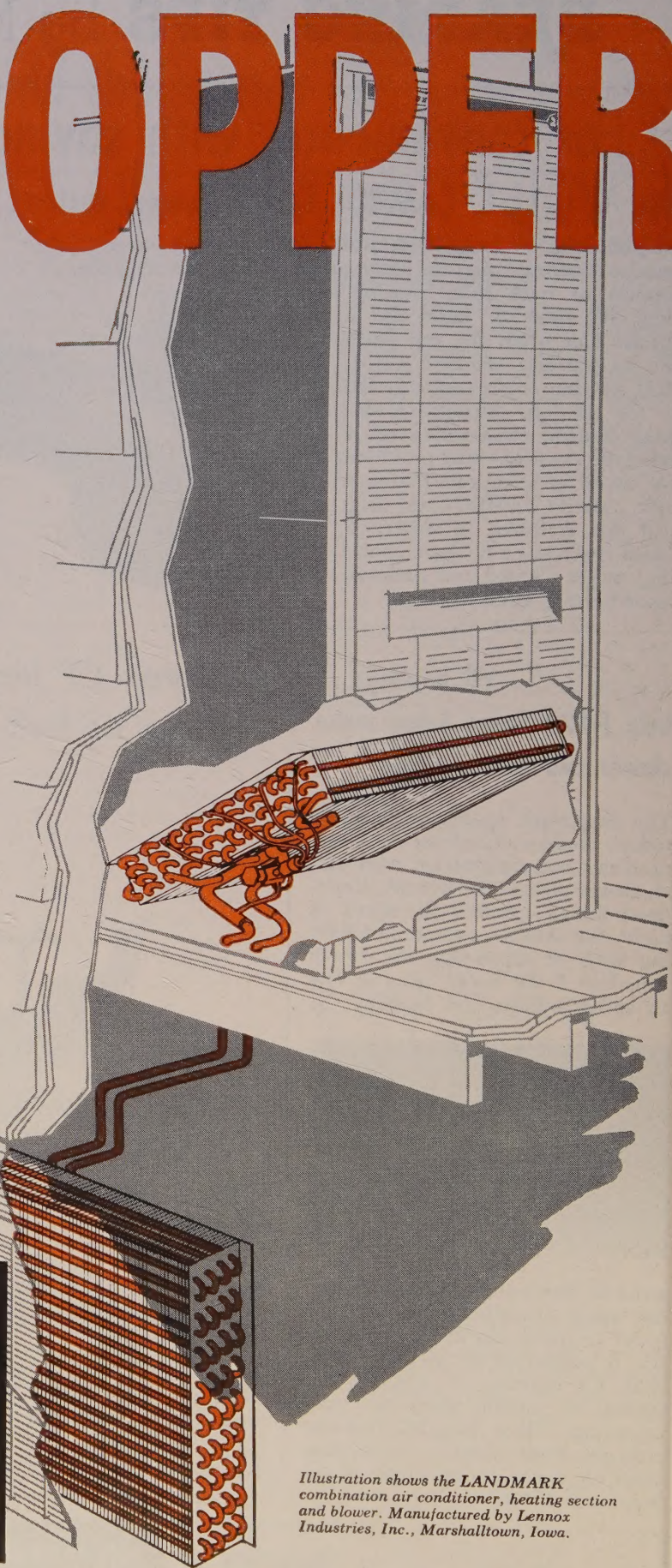
PLAN WITH
SAVE WITH
RELY ON

COPPER

Plan with Copper — because it has distinctive qualities you'll find in no other metal. For example, air conditioning engineers plan with Copper because it is the best commercial heat transfer agent known . . . and because it resists corrosion. Copper also enables them to get the most efficient installation in the smallest possible space.

Save with Copper — as Lennox Industries, Inc. does. Its "Landmark combination of comfort components" heats, cools and cleans air . . . and Copper helps to do it more economically. Copper is easy to work, bend and solder, thus making assembly, handling and installation quicker, surer, easier and less costly.

Rely on Copper — whether it's cooling, heating or whatever your problem. *Think first of Copper's unique advantages!* Not only is it the best commercial heat transfer agent, not only does it resist corrosion . . . Copper is the best commercial conductor of electricity. Copper and its alloys are easy to work, form, draw, join, stamp, polish and plate. And Copper is in good supply to meet your demands today and tomorrow!

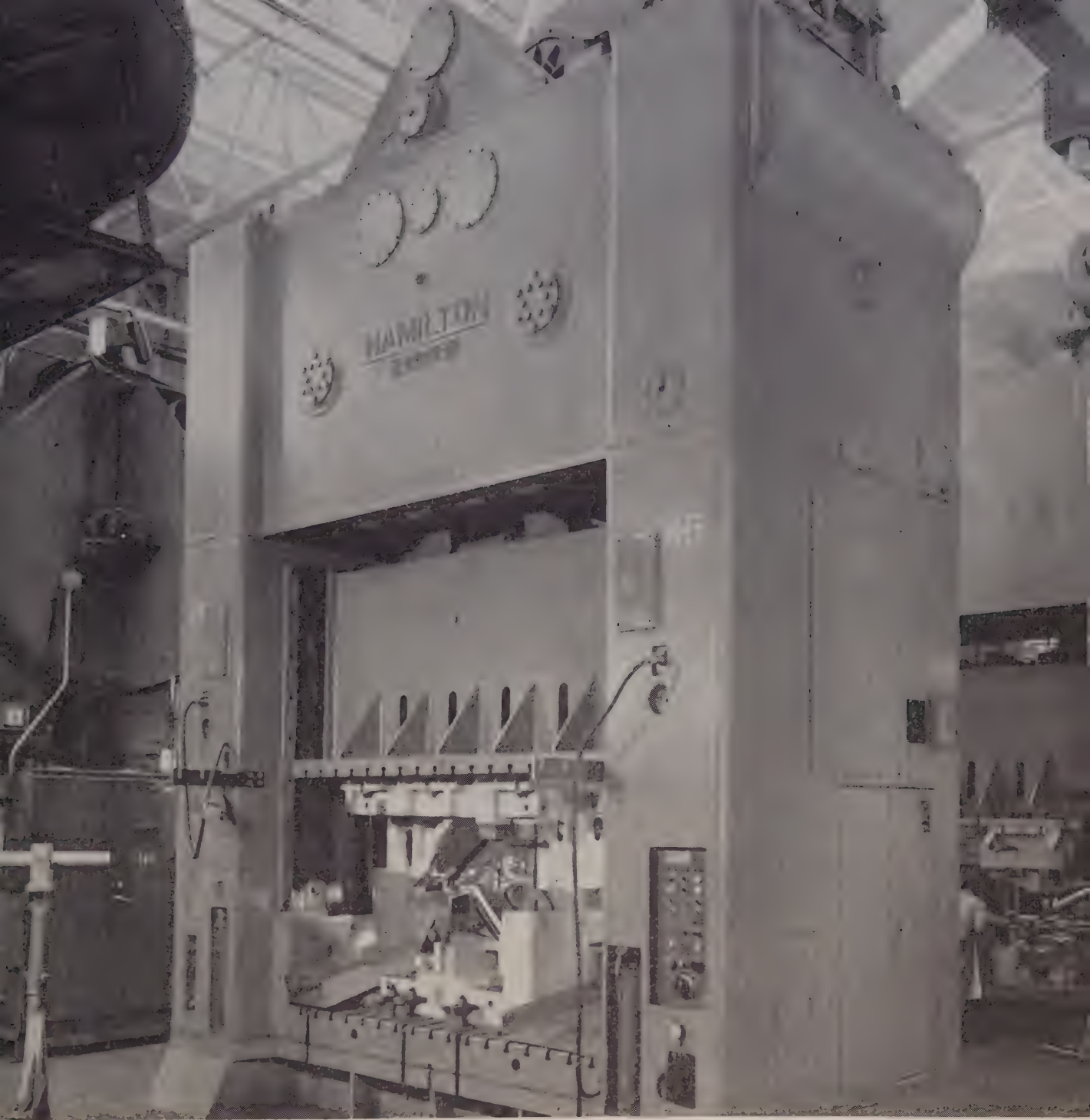


**COPPER
BRASS
BRONZE**

in over 40 Standard Alloys!

Illustration shows the LANDMARK combination air conditioner, heating section and blower. Manufactured by Lennox Industries, Inc., Marshalltown, Iowa.

Address any inquiries about Copper to the Copper & Brass Research Association, 420 Lexington Avenue, New York 17, New York



This versatile 600-ton Hamilton Eccentric Gear Press is currently turning out a wide variety of parts in a major automobile plant in Detroit.

Why an eccentric gear press?

Hamilton Eccentric Gear Presses are ideally suited for heavy duty operations—particularly deep draws and other stamping operations where the tonnage is encountered well up on the stroke.

The eccentric and gear are integral and rotate on

a short eccentric pin, as a result of which torsional and bending loads are negligible.

The many added features of Hamilton Eccentric Gear Presses guarantee greater production, improved stamping quality, and lower maintenance costs.

Write to Dept. IE for Bulletin #13301, describing these machines

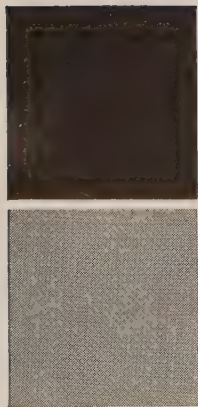
Hamilton Division Hamilton, Ohio
BALDWIN · LIMA · HAMILTON

Diesel engines • Mechanical and hydraulic presses • Can making machinery • Machine tools





SHOW STOPPER



It's the new Torrington Verti-Slide, the first major innovation in the field of 4-SLIDE equipment in 50 years!

This machine was designed to meet a growing need for greater productivity and profitability in the cost-critical area of wire and strip forming.

Seldom before has a new machine created such immediate and widespread interest. We urge you to get the full story. Write or call today.

THE TORRINGTON MANUFACTURING COMPANY

TORRINGTON, CONNECTICUT • VAN NUYS, CALIFORNIA • OAKVILLE, ONTARIO

LETTERS TO THE EDITORS

Fine Statement of Bald Facts

Congratulations. Your concise, courageous article, "Paradox in Paradise" (Apr. 21, Page 55), is the finest statement of the bald facts I have been privileged to read in many months.

This temporary period of adjustment has been used by almost everyone and anybody to get on the so-called bandwagon. It is refreshing to know we still have people in responsible occupations who are willing to call the spade a spade.

F. W. Thiele

Vice President-Mfg.
American Planter Co.
Burr Oak, Mich.

Research Director Likes Report

We would appreciate a reprint of the Program for Management article, "Managing Defensework for Profit" (Apr. 14, Page 125). It is particularly appropriate in view of present business conditions.

Dr. R. G. Ulrech

Director of Research-Engineering
Rochester Div.
Consolidated Electrodynamics Corp.
Rochester, N. Y.

It is informative and has many good pointers for our firm which is entering this area for future sales.

A. S. Novosad

Sales Manager
Gerbing Mfg. Corp.
Northbrook, Ill.

Suggestions System Story



We would appreciate a copy of the article, "Listen to Your Employees" (Apr. 21, Page 68). We thought it extremely worthwhile.

J. L. Dwyer

Suggestion Co-ordinator
Brown-Lipe-Chapin Div.
General Motors Corp.
Elyria, Ohio

Request for More Copies

Your article, "Figures Talk to Warehousekeepers" (Oct. 21, 1957, Page 48), is so interesting and full of commercial meaning that I circulated it among our executive staff with the request that it be read and

(Please turn to Page 12)

HAYNES Alloys solve the *tough* heat problems



JET UNITS

take 1000 G's at 1500 deg. F.

Mounted to the tips of the rotor blades of a new type aircraft are small pressure jet engines encased in shells of HASTELLOY alloy X. In flight, these jet units are subjected to extremes in stress and heat. HASTELLOY alloy X was selected for the shell material because of its high strength at temperatures in excess of 1500 deg. F. and because it is readily formed and welded.

If you have a high temperature or a difficult design problem, contact our nearest sales office, or write HAYNES STELLITE COMPANY, Division of Union Carbide Corporation, General Offices and Works, Kokomo, Indiana. Sales Offices in Chicago, Cleveland, Detroit, Houston, Los Angeles, New York and San Francisco.



XV-1 Convertiplane in history-making flight ...HASTELLOY alloy X sheet was dished and welded to form the shell of the jet units mounted to the tips of the three rotor blades.



HAYNES

ALLOYS

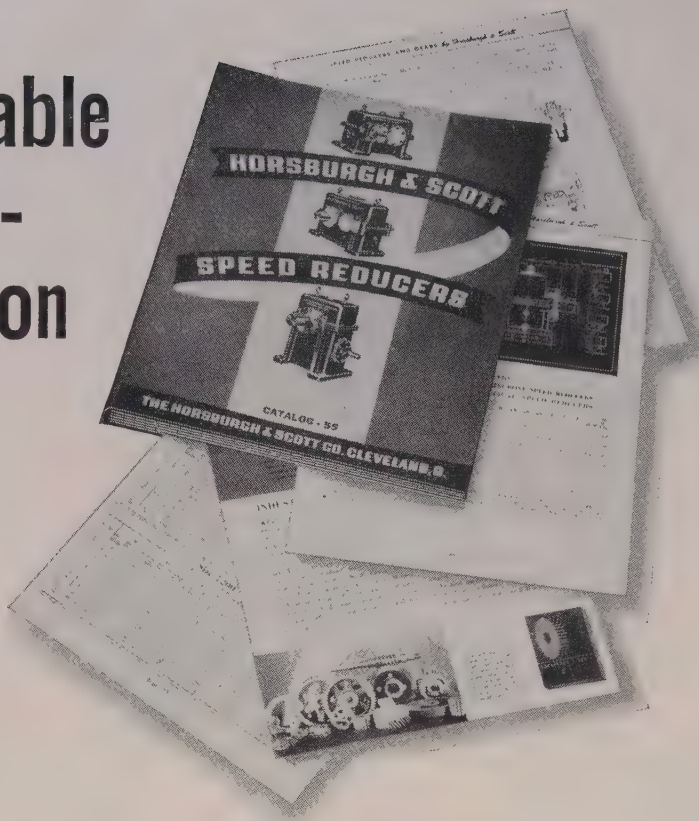
HAYNES STELLITE COMPANY

Division of Union Carbide Corporation
Kokomo, Indiana



"Haynes," "Hastelloy" and "Union Carbide" are registered trade-marks of Union Carbide Corporation.

for
valuable
infor-
mation



on efficient speed reduction... Horsburgh & Scott Catalog 55

More than a catalog, this comprehensive book supplies all the information you need for the proper selection of speed reducers.

Complete size range available, including new sizes.

New ratios and ratings for Worm Helical Speed Reducers shown.

Increased Overhung Load capacities are listed and explained.

Detail dimensions of standard worms and gears are given to help you "build-in" Horsburgh & Scott Speed Reducers.

New Rating Tables—more complete than ever before—easier to use.

Engineering Data Section—more tables and data you want.

All this information and much more is in Catalog 55. It's yours for the asking. Just write us on your letterhead.

THE HORSBURGH & SCOTT CO.

GEARS AND SPEED REDUCERS

5112 Hamilton Avenue
Cleveland 14, Ohio

LETTERS

(Concluded from Page 10)

studied. It has been returned to me with several requests for individual copies. May I have six additional copies?

E. J. Williams

President
Armco Argentina S.A.
Buenos Aires, Argentina

Excellent Financial Analysis

In the Mar. 31 issue, you published an excellent financial analysis of steel companies. May we have three copies for our internal use?

Phillip H. Smith

Director of Purchases
LaSalle Steel Co.
Chicago

Advice Given on Deburring

I have read with a great deal of interest the article, "Deburring with Ultrasound," (Apr. 7, Page 102). We have many small metal stampings which we must deburr and would appreciate your advising us where we can get further information.

Irving T. Willard

President
L. D. Van Valkenburg Co.
Holyoke, Mass.

• Contact Robert Stanton, general manager, Research Associates, P.O. Box 346, Alhambra, Calif.

Series Still Tops

Your 1958 Program for Management articles are maintaining the high quality of past programs. The second article in this series, "Production Control for Profits" (Mar. 17, Page 83), is excellent and of timely interest to our organization.

Jerome H. Kovarik

Industrial Engineer
Bureau of Ordnance, U. S. Navy
Washington

This is an excellent article on the functions of production control.

Rocco J. Pomponio

Production Control Dept.
Chase Brass & Copper Co. Inc.
Subsidiary of Kennecott Copper Corp.
Waterbury, Conn.

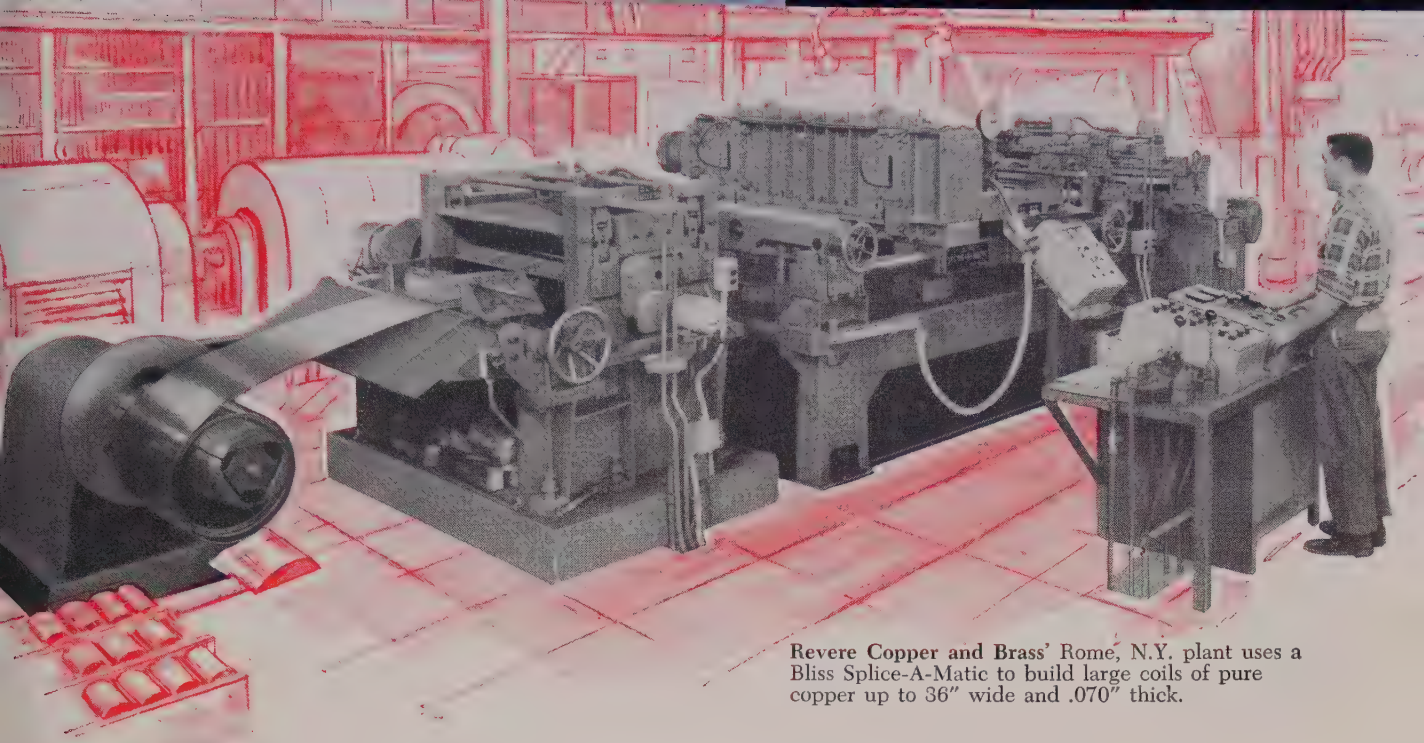
Term Puzzles Reader

In your Mar. 10 issue, you list the distribution of finished steel in 1957 by market classification on Page 165. What markets would be included in the classification, "Unclassified," in your tool steel bar listing?

Benjamin C. Baldwin

Simonds Saw & Steel Co.
Fitchburg, Mass.

• "Unclassified" is used in place of the American Iron & Steel Institute's term, "Shipments of Nonreporting Companies." Apparently the institute approximates shipments by mills not making statistical reports to it. For further information, write Don James, American Iron & Steel Institute, 150 E. 42nd St., New York 17, N. Y.



Revere Copper and Brass' Rome, N.Y. plant uses a Bliss Splice-A-Matic to build large coils of pure copper up to 36" wide and .070" thick.

How much could these machines reduce your coil handling costs?

Substantially, if your requirements are at all similar to those of Universal-Cyclops Steel Corporation or Revere Copper and Brass. Universal-Cyclops uses a Bliss Splice-A-Matic welder to cut handling costs in welding carbon and stainless steels, getting ideal welds in even the 300 series.

Revere Copper and Brass uses *its* Splice-A-Matic to build up the larger coils preferred by many of its customers . . . now also finds that these larger coils cut down-time and set-up time in its own subsequent operations.

Just about any weldable material and coil size is practical with the Bliss Splice-A-Matic. It's been used on most alloys in widths to 60" and with both coils and cut-to-length sheets. And complementing the Splice-A-Matic, Bliss offers a complete line of annealers, trimmers, pinch roll stands, levelers, reels, and other units to form a complete, modern coil build-up line.

To learn how others are automating their coil handling and cutting costs write today for complete information.

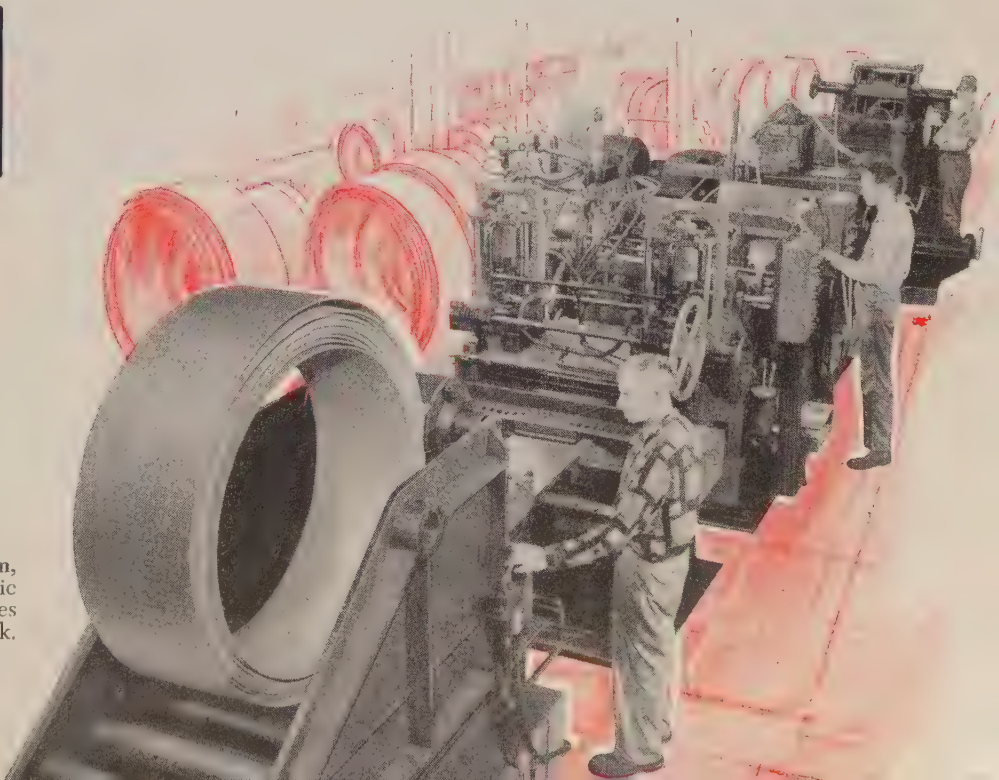


*Bliss is more than a name
...it's a guarantee*

E. W. BLISS COMPANY
Rolling Mill Division
Salem, Ohio

Subsidiary: The Matteson Equipment
Company, Inc., Poland, Ohio

At Universal-Cyclops Steel Corporation,
Bridgeville, Pa., a Splice-A-Matic
successfully welds 300 Series stainlesses
18½" wide and 0.135" to 0.195" thick.

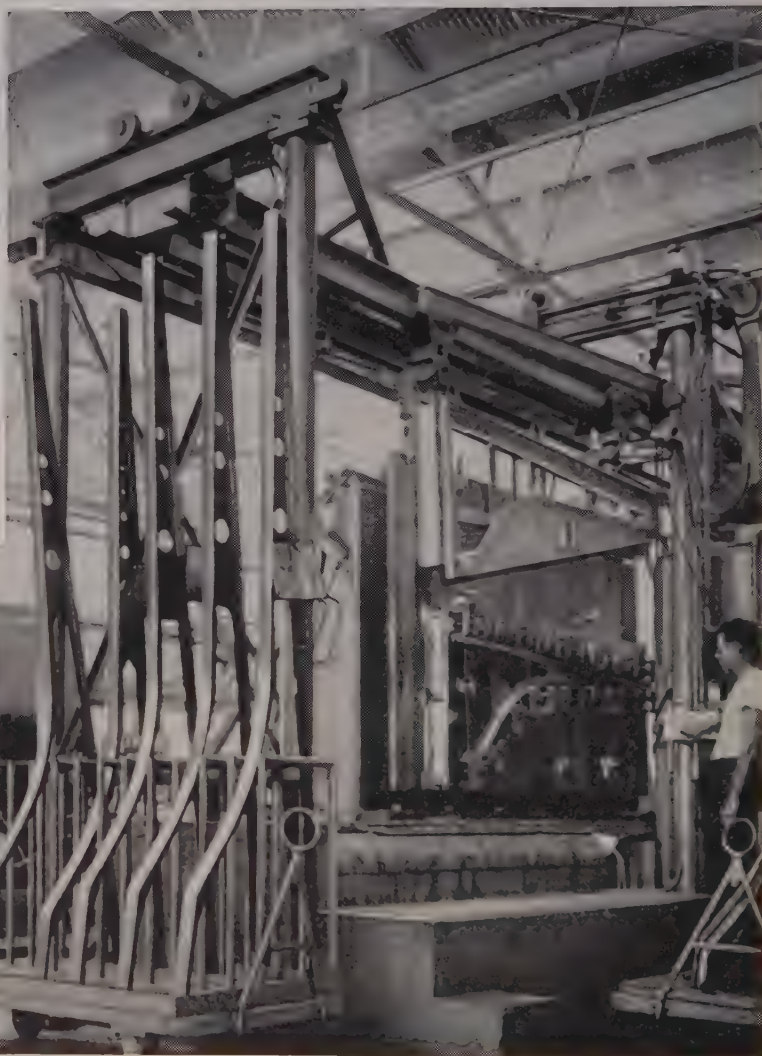


Problem-Solving Products from Republic

Increase Strength/Weight Ratios, Cut Costs, Save Weight, Maintain Dimensional Stability



Part of Rohr Aircraft's heat treating facilities where alloy steel flap tracks are put through a four-step cycle: (1) austenitizing, (2) mar-quench, (3) oil quench, (4) hot water rinse. Sequence maintains required dimensional stability.



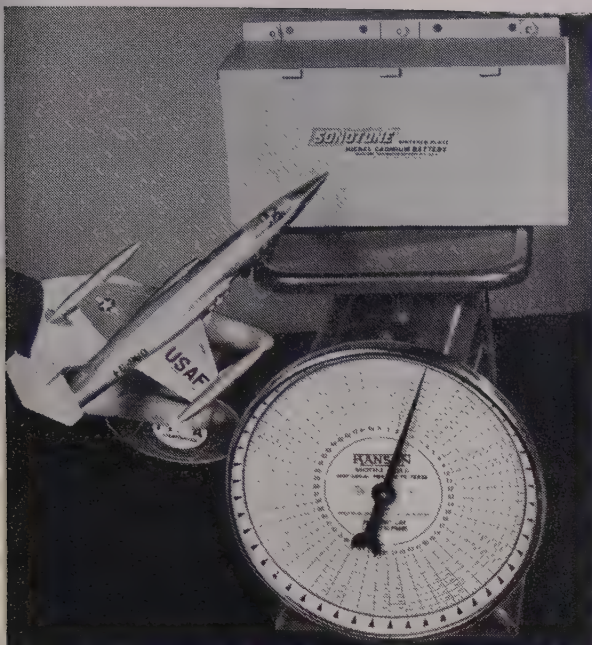
ALLOY STEEL MEETS HIGH STRENGTH, PRECISION REQUIREMENTS IN USAF BOMBERS. Steel weldments produced by Rohr Aircraft Corporation, Chula Vista, California, are an excellent example of the aircraft industry's constant effort to develop better and more economical methods of mass-producing large, high-strength structural aircraft components.

Rohr is currently using this weldment technique in manufacturing flap tracks for an Air Force bomber. The flap tracks are fabricated from AMS 6428 Alloy Steel, a type supplied by Republic. This fine steel provides a minimum tensile strength of 180,000 psi in the heat treated condition. Uniform response to heat treatment assures exceptionally good deep hardening characteristics—plus hard, wear-resistant surfaces.

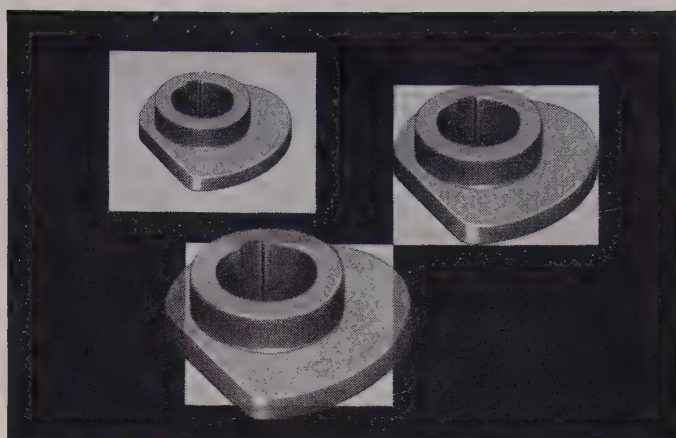
The exceptionally high strength-to-weight ratio of Republic Alloy Steel combined with the highest strength values permits the design of thinner, lighter track sections to save weight and hold down size without sacrifice of strength or safety.

Rohr's development of specialized tooling, welding, and heat treating techniques permits the production of these alloy steel weldments to close tolerances—a rigid aircraft engineering requirement. Costs are reduced by eliminating the need for expensive equipment and excess stock removal.

Specify Republic Alloy Steel for your parts that must be tough, strong, dependable. Our metallurgists are always available to help you in selection and processing. The coupon is your invitation to use this obligation-free service.



REPUBLIC STAINLESS STEEL, Type 302, cuts costs, saves weight, resists corrosion in jet aircraft storage battery cases made by Sonotone Corporation, Elmsford, New York. Stainless steel's exceptionally high strength-to-weight ratio and ability to withstand impact and vibration permits the use of a lighter gage, thus saving weight. Sonotone reports the metal's outstanding corrosion-resistance eliminates the need for painting the cases with no detrimental effect on service or appearance. Republic Stainless Steel also resists the wide extremes of temperature and atmosphere through which the batteries must operate. Mail the coupon for more facts on Republic ENDURO® Stainless Steel.



REPUBLIC IRON POWDERS with Controlled Dimensional Factor give your parts predictable dimensional characteristics after sintering. CDF means that in the presence of copper, Republic Iron Powder—depending on type—can be made to grow, shrink, or remain stable within acceptable tolerance limits. Tool engineers can design tools to part-print dimensions with the assurance that tolerances, transverse to the direction of pressing, can be held within $\pm .001$ inches per inch. Fabricators can produce consistently uniform sinterings at faster rates and at minimum cost. Republic Booklet Adv-763 contains complete details. Send coupon for your copy.

REPUBLIC TITANIUM ALLOYS are used for weight saving and elevated temperature applications in the B-58 Hustler. The supersonic bomber is built for the Air Force by Convair, a division of General Dynamics Corporation, Fort Worth, Texas. These particular titanium alloys have minimum tensile strength of 130,000 psi and a minimum yield strength of 120,000 psi. Among the strongest alloys now being produced, they meet the demand for high strength to resist the effects of aerodynamic heating in supersonic aircraft, such as the B-58. Republic metallurgists and engineers, pioneers in the development of high strength-to-weight metals, are ready to help you apply titanium to your product or process.



REPUBLIC STEEL



*World's Widest Range
of Standard Steels and
Steel Products*

REPUBLIC STEEL CORPORATION

DEPT. ST-5531

1441 REPUBLIC BUILDING • CLEVELAND 1, OHIO

Have a metallurgist call.

- | | |
|--------------------------------------|--|
| <input type="checkbox"/> Alloy | <input type="checkbox"/> Stainless Steel |
| <input type="checkbox"/> Iron Powder | <input type="checkbox"/> Titanium |

Send more information on these Republic products:

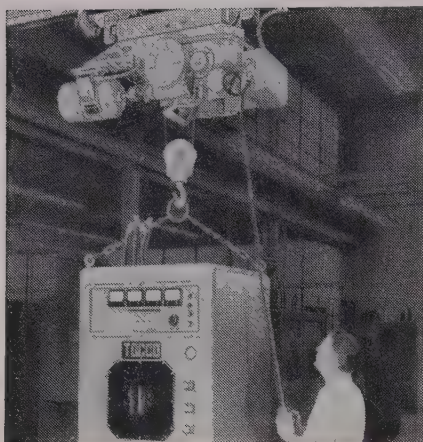
- | | |
|--------------------------------------|--|
| <input type="checkbox"/> Alloy Steel | <input type="checkbox"/> Stainless Steel |
| <input type="checkbox"/> Iron Powder | <input type="checkbox"/> Titanium |

Name _____ Title _____

Company _____

Address _____

City _____ Zone _____ State _____



Push a button for higher production with READING ELECTRIC HOISTS

● Ohio Crankshaft's Tocco Division plant is meeting higher production goals with help from Reading Electric Hoists. The new plant was designed with a Reading Hoist "custom-built" into the plans. Write for our latest catalogs or ask a Reading engineer to analyze your handling operations... at no obligation.

READING CRANE & HOIST CORP.

CHAIN
HOISTS

OVERHEAD
TRAVELING
CRANES

ELECTRIC
HOISTS

2102 ADAMS ST., READING, PA.

WARD STEEL CO.

We specialize in
FINISHED STEEL
BARS—TUBES—STRIP

PROMPT WAREHOUSE
SERVICE ONLY

Most Complete Stock in
America of
BLUE TEMPERED
SPRING STEEL

We believe that the way to sell is to
carry a stock which permits satisfying
any reasonable warehouse demand.

87A Rindge Ave. Ext. Phone WN 4-2460
CAMBRIDGE 40, MASS.

Branch:

3042-3058 W. 51st Street, CHICAGO, ILL.
Phone: Gravenhill 6-2600

STEEL

The
Metalworking Weekly

Editor-in-Chief, IRWIN H. SUCH

Editor, WALTER J. CAMPBELL

Associate Managing Editors, VANCE BELL, JOHN S. MORGAN

WILLIAM M. ROONEYMarket Editor
ROBERT F. HUBERMachine Tool Editor
VAN CALDWELLSteel Plant Editor
HARRY CHANDLERCopy Editor
GLENN W. DIETRICH.....Associate Copy Editor
FRANK R. BRIGGSAssociate Editor
ROBERT O. JAYNESAssociate Editor
AUSTIN E. BRANTAssociate Editor
ROSS WHITEHEADAssociate Editor

ROBERT M. LOVEAssociate Editor
GEORGE J. HOWICKAssistant Editor
H. GLENN CANARYAssistant Editor
G. MacF. TUTTLEAssistant Editor
MARY T. BORGERHOFFAssistant Editor
MARY ALICE EARLYAssistant Editor
EILEEN CORTESAssistant Editor
MARY ANN STUVEEditorial Assistant
JANE WEDGEEditorial Assistant

THOMAS H. BRYAN, TOM WELSH, Art Editors

IRENE KASNER, Editorial Service

Resident Editors

New York 1760 E. 42nd St.
B. K. PRICE, L. E. BROWNE
BRIAN WILSON
Murray Hill 2-2581
Chicago 11520 N. Michigan Ave.
ERLE F. ROSS, WILLIAM E. DEAN
Whitehall 4-1234
Pittsburgh 192837 Koppers Bldg.
WILLIAM V. WALLACE—Atlantic 1-3211

Detroit 3515800 W. McNichols Rd.
A. DONALD POSTMA
Broadway 3-8150
Washington 41123 National Press Bldg.
JOHN R. BOTZUM
Executive 3-6849
London, 2 Caxton St., Westminster S. W. 1
VINCENT DELPORT, European Editor

Editorial Correspondents

Birmingham—Birmingham 3-1121 R. W. KINCEY
Buffalo—Emerson 5385GEORGE E. TOLES
Youngstown—Riverside 7-1471..GEO. R. REISS
Los Angeles—Webster 5-1234..NORMAN LYNN
San Francisco—Yukon 6-5151 EDWIN HAVERTY
Seattle—Melrose 2-1895R. C. HILL
St. Louis—Garfield 1-1212, HAMILTON THORNTON

Cincinnati—Beechmont 1-9607...DICK HAVLIN
Toronto, Canada—Empire 4-9655..F. S. TOBIN
Birmingham, EnglandJ. A. HORTON
Paris, FranceLEON JAUDOIN-PROM
Brussels, BelgiumPAUL DE KEYSER
Dusseldorf, GermanyDR. HERBERT GROSS

BUSINESS STAFF

Business Manager, D. C. KIEFER

Asst. Business Mgr.C. A. TALLINGER JR.
Advertising DirectorH. G. ROWLAND
Advertising Service Mgr. ...DORIS MITCHELL
Production ManagerA. V. ANDERSON
Classified AdvertisingEVELYN DIETZ

Promotion DirectorS. F. MARINO
Market Research Dir.N. R. LADABOUCHE
Circulation DirectorJ. C. GERNHARD
Circulation ManagerG. R. EBERSOLE
ReprintsJUNE SCHILENS

Advertising Representatives

New York 1760 E. 42nd St.
K. A. ZOLLNER, GUY LABAW
Murray Hill 2-2581
Wynnewood, Pa. (Phila.) 200 Wynnewood Ave.
WM. J. VERSCHOOR—Midway 2-6512
Farmington, Conn.12 Farmstead Lane
CALVIN FISHER JR., DANIEL J. ROWLAND
Orchard 7-1756
E. Rochester, N. Y.217 Ridgeview Dr.
HAROLD A. DENNIS—Browning 2105
Pittsburgh 192837 Koppers Bldg.
J. C. SULLIVAN—Atlantic 1-3211
Cleveland 13Penton Bldg.
J. K. GILLAM, N. W. MANNING—Main 1-8260

Cincinnati 62215 Victory Parkway
E. L. FRANKE—Parkway 1-0711
Detroit 3515800 W. McNichols Rd.
C. A. TALLINGER JR., D. C. HYDE
Broadway 3-8150
Chicago 11520 N. Michigan Ave.
L. C. PELOTT, W. L. POLAND
WM. J. D'ALEXANDER, RICHARD BIRDSONG
Whitehall 4-1234
Los Angeles 365943 W. Colgate Ave.
F. J. FULLER—Webster 1-6865
San Francisco 457 Post St.
Robert W. Walker Co.—Sutter 1-5568
Griffin, Ga.1106 Pine Valley Rd.
FRED J. ALLEN—Griffin 7854

BPA



NBP

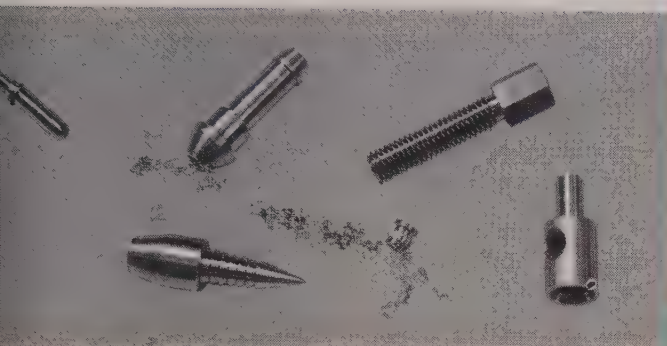
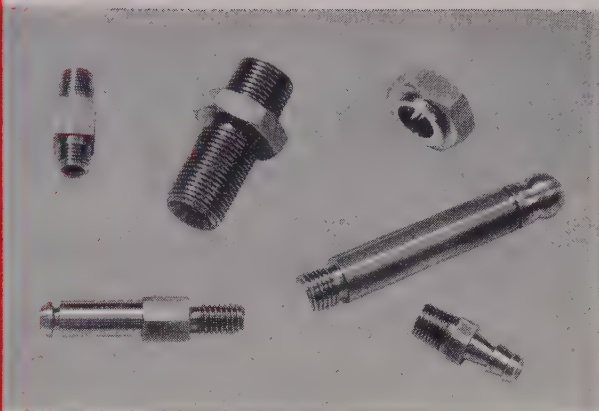
Published Every Monday By

THE PENTON PUBLISHING CO., Penton Bldg., Cleveland 13, Ohio
MAin 1-8260

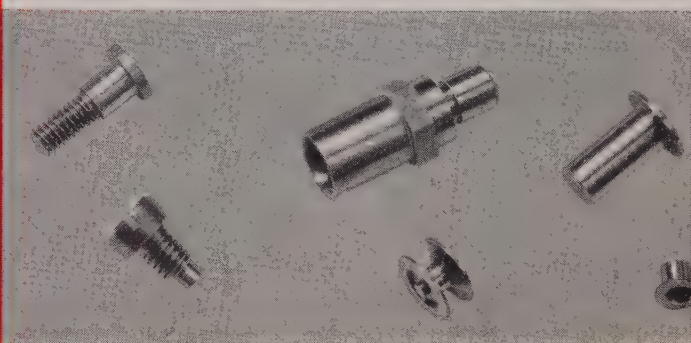
GEORGE O. HAYSChairman
RUSSELL C. JAENKEPresident
FRANK G. STEINEBACHVice President and Secretary
FRANK O. RICEVice President
JOSEPH P. LIPKATreasurer and Assistant Secretary

Also Publisher of
FOUNDRY, MACHINE DESIGN, NEW EQUIPMENT DIGEST, AUTOMATION
Member of Business Publications Audit of Circulation Inc., Society of Business
Magazine Editors, and National Business Publications Inc.

*if you make
parts like these . . .*



or these

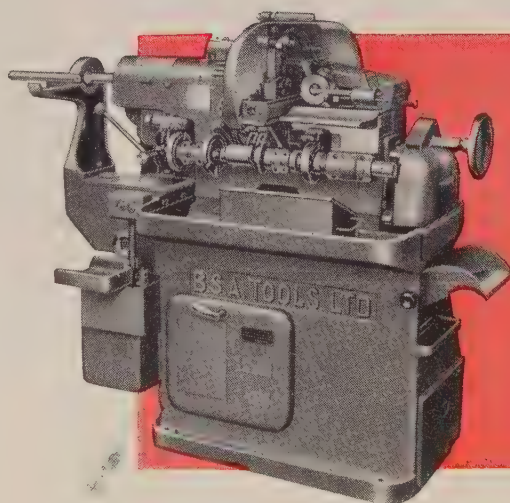


or these

you can do a better job and save money with a BSA Single Spindle Automatic . . .

BSA Single Spindle Automatic Screw Machines offer speeds, machining accuracy, ease of tooling and operation and low cost maintenance equal or superior to anything in their class. All these *plus* "unit construction and replacement" of work spindles, side slides, turrets and gear boxes. This means less machine down time—faster, more accurate production. National Acme provides full engineering and tool design services as well as service facilities and a full stock of replacement parts.

We would like to show you how BSA Single Spindle Automatics fit into your production picture. Write for free illustrated literature.



FIVE STANDARD CAPACITIES:
1/2", 3/4", 1", 1 1/2" and 2".

WIDE RANGE OF SPINDLE SPEEDS:
200 to 6000 on 1/2" machine,
69 to 1260 on 2" model.

All models use STANDARD AMERICAN TOOLING.

BSA Automatic Screw Machines are sold, stocked and serviced in the U.S.A. by

National Acme

THE NATIONAL ACME COMPANY, 189 E. 131st St., CLEVELAND 8, OHIO • Sales Offices: Newark 2, N. J., Chicago 6, Ill., Detroit 27, Mich.

YALE introduces...the INDUSTRIAL tractor shovel **DESIGNED TO GIVE YOU 25%**



See it in action... let your operator drive it!

He'll like the roomy, uncluttered, comfortable cockpit. Adjustable seat gives him plenty of leg and foot room. Finger-tip controls conveniently located. Yale Torque Transmission with one speed forward and reverse—one directional control lever. He'll especially like Yale's exclusive Safety-Curve Arms. Gives him plenty of safe, elbow room—and extra visibility when bucket is raised. For a demonstration in your plant or for further information, write The Yale & Towne Manufacturing Co., Philadelphia 15, Pa., Dept. A-85.

MORE WORK EVERY HOUR

through these exclusive Yale features...

- Yale Torque Transmission (fully automatic)
- Accelerates to operating speed of 8 mph. in 3.5 seconds—to a speed of 13 mph. in 5.5 seconds
- 6 foot dumping clearance
- Sealed brakes
- 45° ground-level bucket tipback
- Safety-curve arms
- Front and rear operating lights

At last—a tractor shovel designed especially for industry! Whether you handle bulk chemicals, sand, gravel, scrap or raw materials, you'll get more productive work at less cost per work unit with this new concept in a tractor shovel.

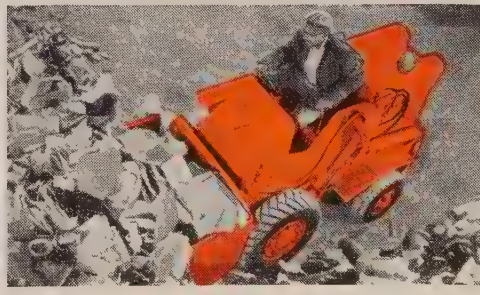
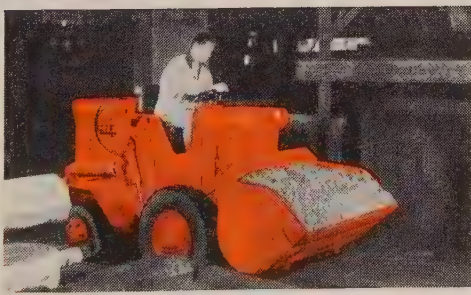
Yale designed it for tight areas—built it *compact* (only 117" overall length) so that it can maneuver in any aisle wide enough for a wheelbarrow. *Accelerates to an operating speed* of 8 mph. in 3.5 seconds and to a top speed of 13 mph. in 5.5 seconds. Exclusive *Yale Torque Transmission (fully automatic)* permits quicker, smoother starting, eliminates shifting, provides more

power under load conditions—in a word, *speeds cycle operations*. This extra speed, plus the greatest carrying capacity of its class (full 2500 lbs.) means *up to 25% more work per hour*.

Yale's loader-linkage design offers unique advantages. Exclusive 45° *Ground-Level Tipback* insures the ultimate in loading action—and a grade-level carrying position to minimize spillage. Exclusive 6 foot *Dumping Clearance* is highest on any model of similar wheel-base. Bucket is *Automatically Self-Locating*. Operator merely lowers from full dump-position to ground-level—bucket automatically returns to digging position.

a product of Yale's integrated design—these engineering advances are standard features

- Gasoline; LP-Gas powered
- Sealed hydraulic system—keeps dirt out
- Pre-cleaner—air cleaner combination
- Extra strong heavy welded steel frame—greater safety, longer life
- Automatic bucket return to digging position
- Carrying capacity of 2500 lbs.—bigger load capacity
- Short wheel base—minimum turning radius
- Sealed generator and distributor
- Balanced weight distribution
- Maximum speeds up to 13 mph.



YALE*

*REG. U. S. PAT. OFF.

YALE & TOWNE

INDUSTRIAL LIFT TRUCKS & TRACTOR SHOVELS • HOISTS

GASOLINE, ELECTRIC, DIESEL & LP-GAS INDUSTRIAL LIFT TRUCKS • WORKSAVERS
WAREHOUSERS • HAND TRUCKS • INDUSTRIAL TRACTOR SHOVELS • HAND AND ELECTRIC HOISTS

SALE MATERIALS HANDLING DIVISION, THE YALE & TOWNE MANUFACTURING CO. MANUFACTURING PLANTS: PHILADELPHIA, PA.; SAN LEANDRO, CALIF.; FORREST CITY, ARK.

Match the conditions in your plant

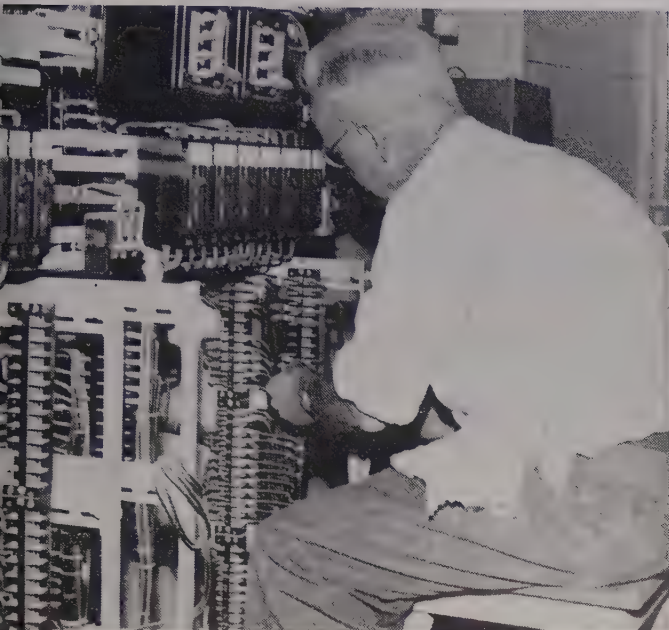
TYPE AND VOLTAGE RATING	CHARACTERISTICS	GENERAL APPLICATIONS	INSTALLATION METHODS
RUBBER—Insulated Control Cables			
Rubber-Insulated 600-Volts	The standard Anaconda rubber control cable—with excellent moisture resistance, heat stability and long-aging characteristics.	General-purpose and station control requirements of utilities and industrials.	Can be installed aerially, in conduit, underground in ducts — or buried directly in the earth.
Ozone-Resistant Rubber-Insulated 600-Volts	An ozone-resistant control cable also possessing proved moisture resistance, heat stability and long-aging characteristics.		
THERMOPLASTIC—Insulated Control Cables			
Polyethylene-Insulated 600-Volts	A standard Anaconda thermoplastic control cable with excellent moisture and chemical resistance. Highly resistant to electro-endosmosis. A long-lived cable.	General-purpose control requirements of utilities and industrials.	Can be installed aerially, in conduits, underground in ducts—or buried directly in the earth.
DENSHEATH® Insulated 600-Volts	A standard Anaconda thermoplastic control cable with excellent moisture and chemical resistance. Long-aging performance.		
Anaconda Type PND* Polyethylene-Insulated — Nylon Conductor Cover 600-Volts**	An approved control cable with dependable chemical and abrasion resistance. Features small diameter. Long-aging properties.	General-purpose control requirements of utilities and industrials where space is a limiting factor.	Can be installed aerially, in conduit or underground in ducts.
Polyethylene-Insulated 1000-Volts	A thermoplastic control cable excelling in moisture and chemical resistance. Features heavy insulation thickness. Long-aging characteristics.	Station control requirements of utilities and industrials.	Can be installed aerially, in conduit, underground in ducts — or buried directly in the earth.

**IPCEA voltage rating is 300 volts.

*Trademark

Lead sheaths are furnished on rubber-insulated control cables if requested. Interlocked armor is available for all types of control cable.

with these Anaconda Control Cables



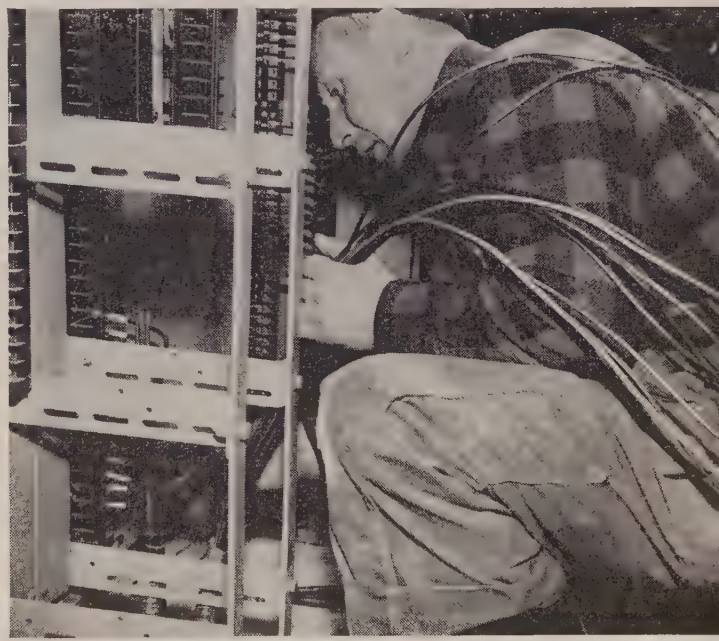
Anaconda's Type ANW-Rubber-Insulated Control Cable. High-quality product offering peak reliability, outstanding heat resistance. Cable is also highly resistant to moisture, acids, alkalis, other chemicals. Unusual overload capacity and long-lagging characteristics. Individual conductor covering and over-all jacket of neoprene.



Anaconda Thermoplastic Control Cable Multiple-use. Can be installed aerially, in conduit, underground in ducts, or buried directly in earth. Available with polyethylene (600 or 1000 volts) or Densheath* vinyl resin (600 volts) insulation and Densheath over-all jacket. Densheath jackets over polyethylene-insulated conductors on request.



Butyl-Insulated Control Cable. Special ozone-resistant control cable. Individual conductor covering and over-all jacket of neoprene provide maximum insurance against moisture and mechanical injury.



Anaconda Type PND Control Cable. For general-purpose uses where space is a limiting factor. Allows installation of a 12-conductor cable in conduit carrying a 6 or 7. Individual conductor covering of abrasion-, oil- and gasoline-resistant nylon.

Permanent Full-Color Coding on rubber cables, by means of Anaconda's rubber-base coating, assures quick and positive circuit identification. Coding by surface printing, which conforms to IPCEA standards, also available. On thermoplastic cables, full-color coding with pigmented insulation and surface printed coding are likewise offered.

For full information on any of Anaconda's complete line of control cables — including cables engineered for more specialized control requirements — see your Anaconda distributor or the Man from Anaconda. A comprehensive technical booklet on Anaconda Control Cables is yours for the asking. Write: Anaconda Wire & Cable Company, 25 Broadway, New York 4, New York.

*Reg. U.S. Pat. Off. 58339



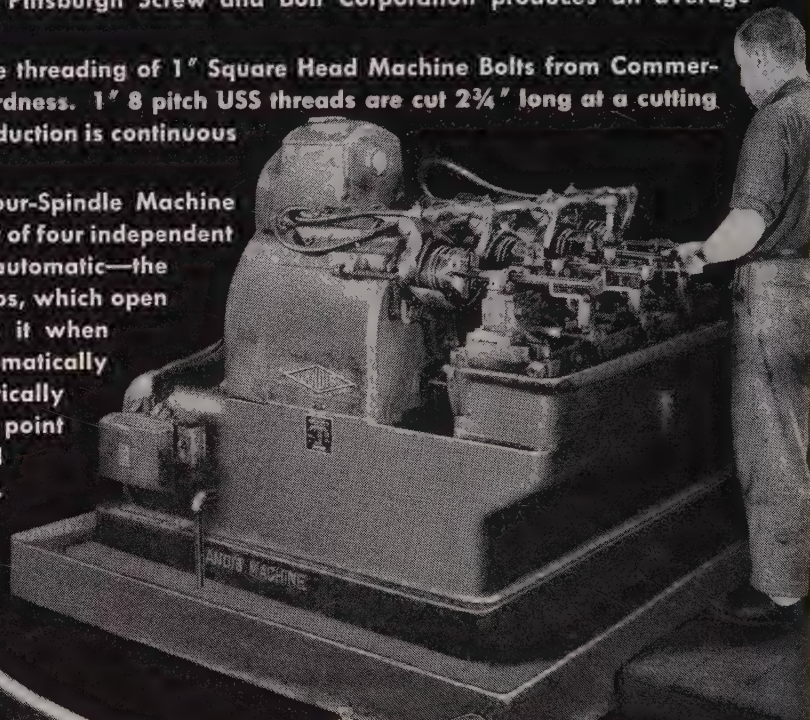
SEE THE MAN FROM **ANACONDA**
FOR **CONTROL CABLE**

One Machine Bolt Threaded Every 4 $\frac{1}{3}$ Seconds... WITH THE **LANDIS 4-SPINDLE SEMI-AUTOMATIC THREADER**

A single operator at the Pittsburgh Screw and Bolt Corporation produces an average output of 840 machine bolts per hour.

This operation requires the threading of 1" Square Head Machine Bolts from Commercial Steel blanks of 217/163 Brinell hardness. 1" 8 pitch USS threads are cut 2 $\frac{3}{4}$ " long at a cutting speed of 44 surface feet per minute. Production is continuous and chaser cost is extremely low.

The use of the LANDIS Four-Spindle Machine allows the operator to surpass the output of four independent threading spindles. Operation is semi-automatic—the operator inserts the workpiece in the grips, which open and close automatically, and removes it when threading is complete. The die head automatically feeds onto the workpiece, opens automatically and is automatically withdrawn at the point when the desired thread length is completed.



Send
specifications
when writing
for Bulletin
#E-88-1

LANDIS *Machine* COMPANY. WAYNESBORO
PENNSYLVANIA

CALENDAR OF MEETINGS

May 7-17, United States World Trade Fair: New York Coliseum, New York. Information: United States World Trade Fair, 331 Madison Ave., New York 17, N. Y.

May 8-9, National Association of Sheet Metal Distributors: Spring convention, Sheraton-Blackstone Hotel, Chicago. Association's address: 1900 Arch St., Philadelphia 3, Pa. Executive secretary: Thomas A. Fernley Jr.

May 8-9, Refractories Institute: Annual meeting, Homestead, Hot Springs, Va. Institute's address: 1801 First National Bank Bldg., Pittsburgh 22, Pa. Executive secretary: Avery C. Newton.

May 8-10, American Material Handling Society: Material handling and industrial packaging show and technical conferences, Great Western Exhibit Center, Los Angeles. Information: J. M. Druliner, Society Show Chairman, 2807 Sunset Blvd., Los Angeles 26, Calif.

May 11-14, American Steel Warehouse Association: Annual meeting, Riviera Hotel, Las Vegas, Nev. Association's address: 540 Terminal Tower, Cleveland 13, Ohio. Executive secretary: Robert G. Welch.

May 11-14, Automotive Engine Rebuilders Association: Annual meeting, Sheraton-Park Hotel, Washington. Association's address: 901 Roosevelt Bldg., Indianapolis 4, Ind. Executive vice president: R. G. Patterson.

May 11-14, Copper & Brass Research Association: Annual meeting, Homestead, Hot Springs, Va. Association's address: 420 Lexington Ave., New York 17, N. Y. Managing director: T. E. Veltfort.

May 11-14, National Association of Purchasing Agents: Annual meeting and exhibit, Conrad Hilton Hotel, Chicago. Association's address: 11 Park Place, New York 7, N. Y. Secretary: G. W. H. Ahl.

May 12-14, American Management Association: General management conference, Commodore Hotel, New York. Association's address: 1515 Broadway, New York 36, N. Y. President: Lawrence A. Apley.

May 12-15, Oil & Gas Power Division, American Society of Mechanical Engineers: Annual conference, Bellevue-Stratford Hotel, Philadelphia. Society's address: 29 W. 39th St., New York 18, N. Y. Secretary: C. E. Davies.

May 12-16, Southwestern Metal Exposition & Congress: State Fair Grounds and Statler Hilton Hotel, Dallas. Sponsor: American Society for Metals, 7301 Euclid Ave., Cleveland 3, Ohio. National secretary: W. H. Eisenman.

Is the Answer to your production problem



in
here?



2nd Edition of **LOGAN'S FAMOUS KEY BOOK**

Often a problem that we regard as "strictly our own" has already been solved by others under similar conditions. Sometimes it's even common. That's why it pays to know what others are doing.

Perhaps the new Logan Key Book will help you iron out materials handling wrinkles adding unnecessary time and labor to production costs. Logan is happy to share its experience with you in the form of this generously illustrated booklet of authentic case histories—24 in all with 50 actual installation views.

Why don't you write for your copy today?

LOGAN CO., 535 CABEL ST., LOUISVILLE 6, KY.

Logan Conveyors



the beverage bar with a "brain"...

of Stainless Steel

The "brain" in this coin-operated soda dispenser is a valve that works round the clock to see that you get soda . . . or your money back.

It's an ingenious unit that automatically shuts off if the system fails — or the tank is emptied. Then too, it provides a device that bleeds air after each refill . . . and a precise mechanism that equalizes pressure to assure a uniform drink. Sanitary and corrosion-proof, all its working parts are made of stainless steels — not just one steel, but *four*.

The plunger and stop are Type 430F bar (magnetic) . . . the spring is 302 wire (non-magnetic) . . . the probe is 303 bar (machinability) . . . and the cylinder is 304 *welded* tube (economy). Despite this mixed requirement, *all 4 grades* are supplied *overnight* by Frasse.

You'll find it simpler, when working with stainless steels, to work from Frasse warehouse stocks. The wide range of sizes, shapes and analyses, so quickly available from this single source, is a time and effort saving convenience. For stainless steels . . . *always* call Frasse *first*.

Call FRASSE 1st
for **COMPLETE**

**STAINLESS
STEEL
SERVICE**

Bars	Wire
Forgings	Tubing
Sheets	Pipe
Strip	Fittings
Plates	Valves



YOUR STEEL
SERVICE CENTER

Peter A.

Frasse

& Co., Inc.

NEW YORK 13, N. Y.
17 Grand St.
Walker 5-2200

PHILADELPHIA 29, PA.
3911 Wissahickon Ave.
BAldwin 9-9900

BUFFALO 7, N. Y.
P. O. Box K, Sta. B
BEdford 4700

SYRACUSE 1, N. Y.
P. O. Box 1267
HOward 3-8655

HARTFORD 1, CONN.
P. O. Box 1949
JAckson 9-6861

LYNDHURST, N. J. • ROCHESTER, N. Y.



UNITED®

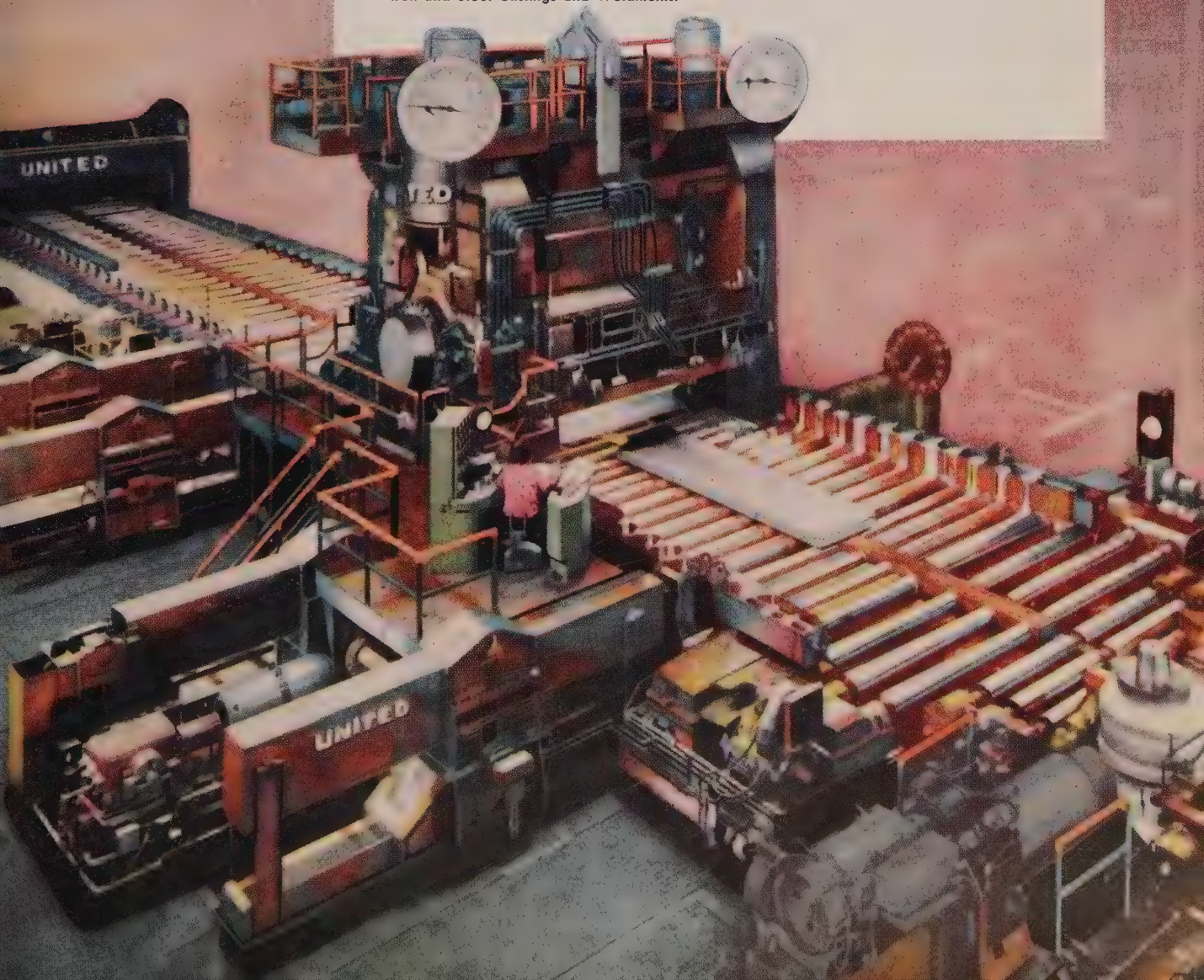
160" MILL FOR ROLLING ALUMINUM PLATE

UNITED ENGINEERING AND FOUNDRY COMPANY
PITTSBURGH, PENNSYLVANIA

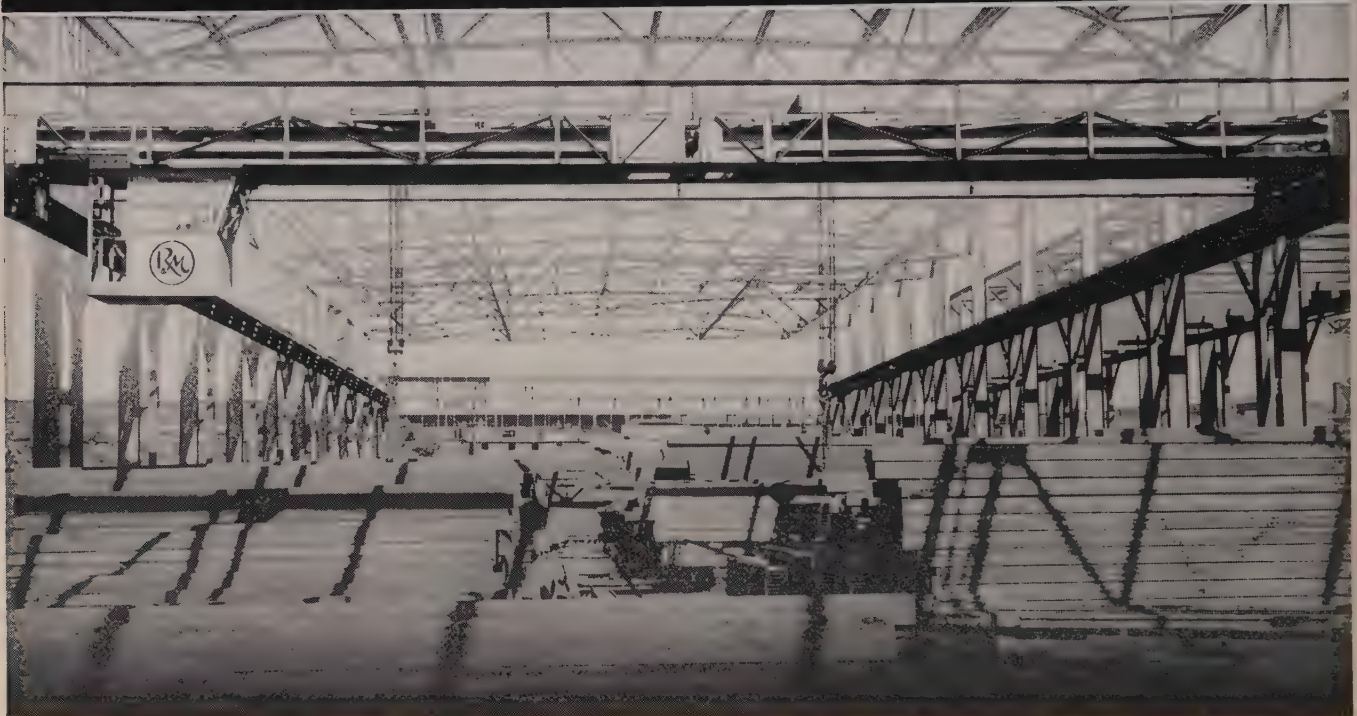
Plants at Pittsburgh, Vandergrift, Youngstown, Canton, Wilmington

SUBSIDIARIES: Adamson United Company, Akron, Ohio; Stedman Foundry and Machine Co., Inc., Aurora, Indiana

Designers and Builders of Ferrous and Nonferrous Rolling Mills, Mill Rolls, Auxiliary Mill and Processing Equipment, Presses and other heavy machinery. Manufacturers of Iron, Nodular Iron and Steel Castings and Weldments.



cranes that stay new



Robbins & Myers cranes have long, productive lives because they combine conservative engineering with quality construction materials—a combination that doesn't permit short-cut manufacturing. Carefully controlled standards are maintained for bridge deflection under load, rigidity, service factor. Your R & M crane is completely assembled and tested before shipment, then match-marked and doweled for perfect re-assembly in your plant. R & M builds standard cranes with capacities to 10 tons, spans to 65 feet; larger capacities and longer spans are available in custom designs.

Illustrated above: 15 ton capacity, two hoist, cab controlled crane. Span: 74½ feet. Bridge control: 6 step variable speed to 250 fpm. Trolley control: 4 step variable speed to 125 fpm.

Send today for our new bulletin describing single and double girder cranes in top-running and underhung designs.

Robbins & Myers, Inc., Hoist & Crane Div., Springfield, O.



take it up with
ROBBINS & MYERS
hoists & cranes



Request Bulletin 900

**Stainless Steel
welding information:**

Keep it clean

You get strong, tight joints when you weld Stainless Steel, but you have to make sure the surfaces have been thoroughly cleaned. Any grease, oil or dirt on the welded surface might affect the corrosion resistance of Stainless.

When you want to repair a crack, it's a good idea to chip out the cracked area completely so you're sure that only clean, solid metal is exposed. And remember, there are a lot of different kinds of Stainless Steel and they don't all react the same way. Be sure you handle each job right—check the "Stainless Steel Fabrication Book" before you start. If you don't have a copy of this 130-page guide, write on your company letterhead to United States Steel, 525 William Penn Place, Pittsburgh 30, Pennsylvania.

Remember: Stainless Steel isn't difficult to fabricate; it's just different.

USS is a registered trademark

United States Steel Corporation—Pittsburgh
American Steel & Wire—Cleveland
National Tube—Pittsburgh
Columbia-Geneva Steel—San Francisco
Tennessee Coal & Iron—Fairfield, Alabama
United States Steel Supply—Warehouse Distributors
United States Steel Export Company

United States Steel



Fastener Facts

by Paul Tunison, Chief Engineer — Judson L. Thomson Mfg. Co.

FASTENING WITH DEEP-DRILLED RIVETS

When to specify:

You specify deep-drilled rivets (sometimes called tubular rivets), when you want low-cost, permanent fasteners for leather, plastics, rubber, wood, canvas and other easily-pierced, compressible materials.

Millions of Thomson Deep-Drilled Rivets are used each year by leading manufacturers of leather goods, luggage, shoe skates, baseball shoes, camera cases, hand bags, golf bags, and other sporting goods. These self-piercing rivets are used to replace or reinforce stitching.

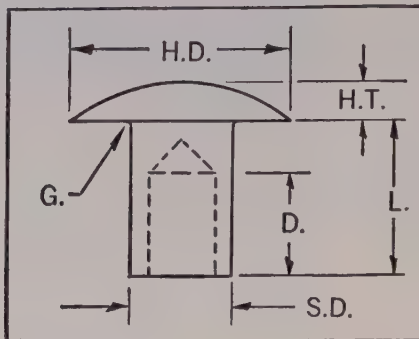
How you benefit:

With Thomson Deep-Drilled Rivets, you can eliminate the cost of pre-punching or pre-drilling holes in materials. Drilled to a depth up to $\frac{1}{2}$ " they punch their own holes through the material and compress it within their hollow shanks. Clinched by high-speed automatic rivet-setting machines, which can be operated by unskilled help, they keep assembly time and costs at a minimum.

What dimensions:

Hole Depth (D) of standard deep-drilled rivets always exceeds shank diameter, but never exceeds $\frac{1}{2}$ ". Exact depth is determined by the compressibility of materials to be fastened and by the clinch requirements of the application. A rule of thumb is to add shank diameter to the thickness of the compressed assembly. The safe rule is to have tests run on actual samples.

Head Diameter (H.D.) ranges between 1.75 and 2.75 times shank diameter for rivets produced by single-blow heading machines. Head diameters up to $3\frac{1}{2}$ times shank diameter are possible ... at higher cost.



Head Thickness (H.T.) ranges from 0.3 to 0.6 times shank diameter, depending on head shape: oval, flat countersunk, ideal, beveled flat countersunk or cone.

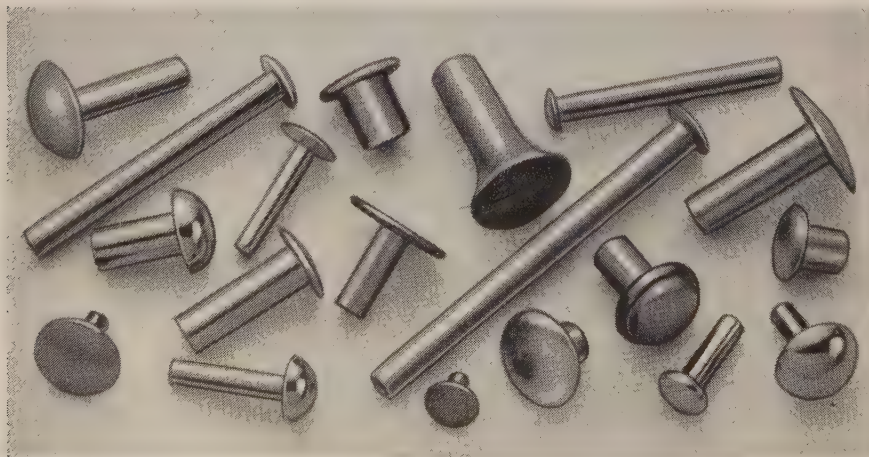
Shank Diameter (S.D.) of standard sizes ranges from .040" to .320".

How Clinched:



You have a choice of two clinches with Thomson Deep-Drilled Rivets, depending on the required strength: roll clinch or scored clinch. Roll clinch, produced by correctly-shaped anvils (either solid or spring pilot type), is stronger. Scored clinch is specified when clinch must be turned into the surface of the work.

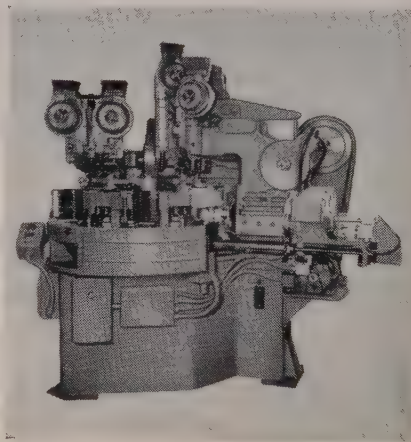
Thomson Deep-Drilled Rivets are also clinched inside caps which match rivet heads to improve the appearance of the assembly and increase the strength. Washers (burrs) are also used to prevent the clinch from tearing loose by giving a stronger bearing against soft surfaces.



DESIGN
PRODUCTION
& PURCHASING
DATA

High Speed Setting Machines:

The inherent economy of rivets as fasteners is multiplied by high-speed assembly with automatic rivet-setting machines. Thomson has developed more than 250 styles of machines which can do thousands of fastening jobs ... with or without adaptations. Multiple rivet-setting heads, special work handling and loading fixtures are optional features that accelerate riveting operations. Thomson selects and custom-tools the proper machine to speed assembly and reduce costs. Available on a sale or lease basis.



Automatic Rivet-Setting Machine

Design and engineering service:

Thomson analyzes your company's fastening problems and makes specific rivet and machine recommendations ... at your request. When called in early, we can often meet your requirements with standard rivets and machines that eliminate the need for costly special fasteners and tooling. For work in progress, submit sketches, prints or samples for suggestions and quotations.

Free "Fasteners Fact File"

Our new manual on all phases of riveting belongs in the hands of everyone who specifies or buys fasteners. It covers rivet types, applications, materials and other factors that determine the selection of the right design, rivet and machine for cutting fastening costs. Request your copy today. Write: Judson L. Thomson Mfg. Co., Department S, Waltham 54, Mass.



JUDSON L.

THOMSON

MFG. CO., WALTHAM 54, MASS.

*These workmen are using
Youngstown Yoloy "E" high-
strength steel to fabricate
belt rails—a component of
DF Loaders—at Evans
Products Co.*



Accent on Excellence

Youngstown Yoloy "E" high-strength steel



Two DF* Loader-equipped railroad cars easily do the work of three standard box cars. That's because DF cars (31,000 now in service) can be loaded to capacity—earn greater revenue for railroads.

Portions of Evans DF Loaders are fabricated from Youngstown's Yoloy "E" Angles and Hot-Rolled Yoloy Sheets by Evans Products Company, Plymouth, Michigan. All Yoloy Steels are produced to meet a wide range of applications, where high strength and corrosion-resistance are of prime importance.

Wherever high strength steel becomes a part of things *you* make, the high standards of Youngstown *quality*, the personal touch in Youngstown *service* will help you create products with an "accent on excellence".

*DF is a trademark of Evans Products Company.



... Locks in lading, eliminates damage and dunnage



THE
YOUNGSTOWN

SHEET AND TUBE COMPANY

Manufacturers of Carbon, Alloy and Yoloy Steel, Youngstown, Ohio



Send for free technical
bulletin on Youngstown
Yoloy "E" Steel.



Sticks like glue . . . works in

You are looking at a Black & Decker Magnetic Drill Press at work 15 feet off the ground! No operator holds it—it *holds itself* to the work with over a thousand pounds of magnetic power. No operator touches it—he feeds it precisely into the work with fingertip pressure on the exclusive B&D Hydra-Power Feed.

The new B&D Magnetic Drill Presses are truly so unusual they must be seen to be appreciated. They

come in two capacities— $\frac{3}{4}$ " and $1\frac{1}{4}$ ". They are complete precision units—not attachments. They drill, ream and tap upside down, on their sides or upright. They are ideal for tool shops, steel fabricators, heavy machinery, maintenance . . . anywhere you have to take a drill press to the work. THE BLACK & DECKER MFG. Co., Dept. 2005, Towson 4, Maryland. (In Canada: Brockville, Ontario.)

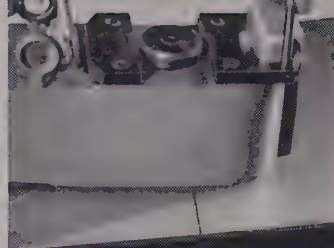
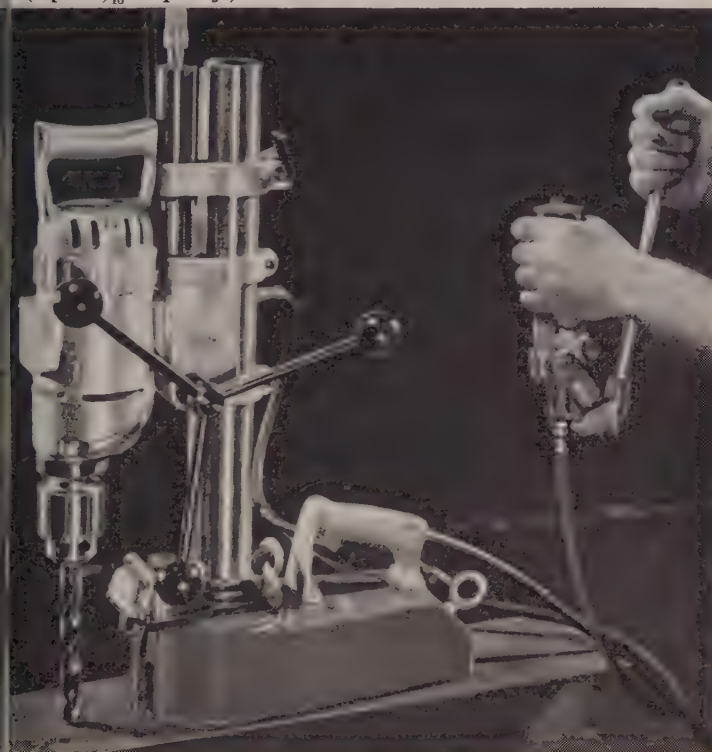
See the Features of the NEW Black & Decker Magnetic Drill Presses





1 1/4" MAGNETIC DRILL PRESS works high in the air upside down! (Up to 1 1/4" capacity.)

3/4" MAGNETIC DRILL PRESS goes to the work, drills upside down, too! (Up to 3/16" capacity.)



★ **MULTIPLE USE!** Magnetic Unit of 1 1/4" Press may be used to hold pieces for butt welding, etc!

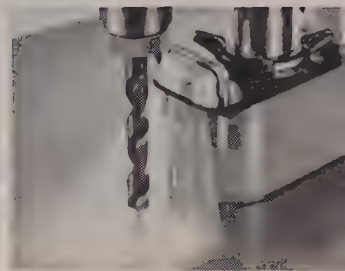


★ **CLOSEST TOLERANCES!** Drill Point Locator provides accuracy never before possible! Built into magnet.

Check these exclusive Black & Decker features!



★ **SAFETY-GRIP SWITCH** keeps magnet always "on" after operator releases switch trigger—another safety plus.



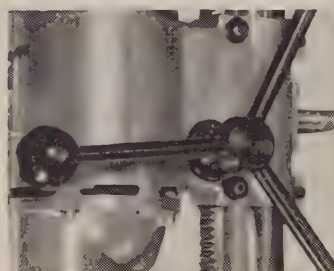
★ **WORK AREA BRIGHTLY LIT** by exclusive headlight. Special ruggedized bulb withstands hard usage.



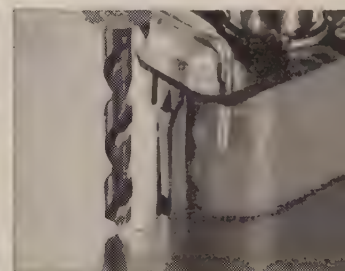
★ **LONGER LIFE—INCREASED SAFETY** results from built-in time delay in 1 1/4" Reversing Switch. Prevents motor being reversed too rapidly.



★ **LONGER LIFE—INCREASED SAFETY** as Reversing Switch of 3/4" Press is turned. Switch goes to "neutral" then "on" again in other direction.



★ **HIGHEST ACCURACY** results from unitized construction of drill press—cannot work loose, no side play . . . Drill Press is an integral unit.



★ **DRASTICALLY INCREASED SAFETY** due to location of magnet near drill point. Provides maximum magnetic power at drill pressure point.

any position!

Leading Distributors Everywhere Sell

Black & Decker®

Quality Electric Tools . . . Power-Built for top performance

Look Under
"TOOLS-ELECTRIC"
in 'Yellow Pages'

MAIL COUPON TODAY FOR A FREE DEMONSTRATION!

THE BLACK & DECKER MFG. CO., Dept. 2005, Towson 4, Md.

- ☐ Please arrange a demonstration of your ☐ 1 1/4"; ☐ 3/4" Magnetic Drill Press
- ☐ Please send me additional information

Name _____ Title _____

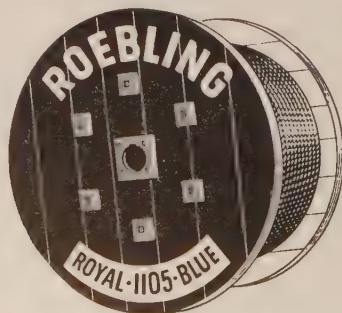
Company _____

Address _____

City _____ Zone _____ State _____



NOTHING TRANSMITS POWER AT SUCH LOW COST FOR SO LONG AS ROEBLING ROYAL BLUE WIRE ROPE. No means of transmitting power can be compared—on a cost basis—with Royal Blue, the strongest wire rope you've ever used. Meeting industry's stringent service demands is a function fulfilled by Royal Blue in many ways: unimpaired flexibility, great resistance to shock, abrasion and corrosion . . . a plurality of qualities that make for singularly long service life. For further details on "length through strength," communicate with Wire Rope Division, John A. Roebling's Sons Corporation, Trenton 2, New Jersey.



ROEBLING 
Branch Offices in Principal Cities
Subsidiary of The Colorado Fuel and Iron Corporation 

**NEW...YET
BILLION-PROVED...
VALFORGINGS
TO IMPROVE
PARTS STRENGTH,
CUT COSTS**



Here is a full-size cross-section of a VALFORGING... an extruded steel forging made by the Valve Division. See how the grain flow lines are continuous and symmetrical with the outside contour.

This means added strength and higher impact resistance in any large-head, small-shaft part.

VALFORGINGS come to you precision-forged from any grade of steel you specify, and with practically the finished dimensions of the part. High-cost machining and scrap generation are greatly reduced. The flawless structure of a VALFORGING assures dependability of the finished part and eliminates manufacturing scrap losses resulting from the uncovering of internal defects.

You can confidently switch to VALFORGINGS... more than one billion have already been produced by the Valve Division as engine valves for the cost-alert automotive industry.

To know *all* about VALFORGINGS, tell us when a sales engineer from the Valve Division may call on you.



Valve Division *Thompson Products, Inc.*

DEPT. ST -558 • 1455 EAST 185th STREET • CLEVELAND 10, OHIO

© 1958

7 more **Industrial** Cranes speed production here...



Heavy trailer frames are lifted, turned, positioned for welding and moved along the 1200' assembly line with a 5-ton Industrial Crane.

Another manufacturer of highway trailers chooses Industrial!

A leading manufacturer of truck trailers uses *seven* 5-ton **INDUSTRIAL** top-running, double-girder, motor-driven cranes in its midwest plant. Two assembly bays, each 1200 feet long are served by one cab-controlled and four floor-controlled **INDUSTRIAL** cranes, moving materials and heavy frames along the assembly lines. Two other floor-controlled **INDUSTRIAL** cranes handle materials in the machine shop.

Constant, regular use in rugged service such as this proves to **INDUSTRIAL** users that *Industrial Cranes are best for the long run.*

- Industrial builds a complete line of cranes for every need. Write for catalogs.

Agents in all principal industrial cities.



Floor-controlled assembly crane

Two floor-controlled Industrial 5-ton cranes move these heavy duty goose-neck trailers along a 1200-foot assembly line. The frames weighing 7000 lbs. and more are placed with precision and speed.

One hand control

Industrial's exclusive control box design makes one-hand control easy.



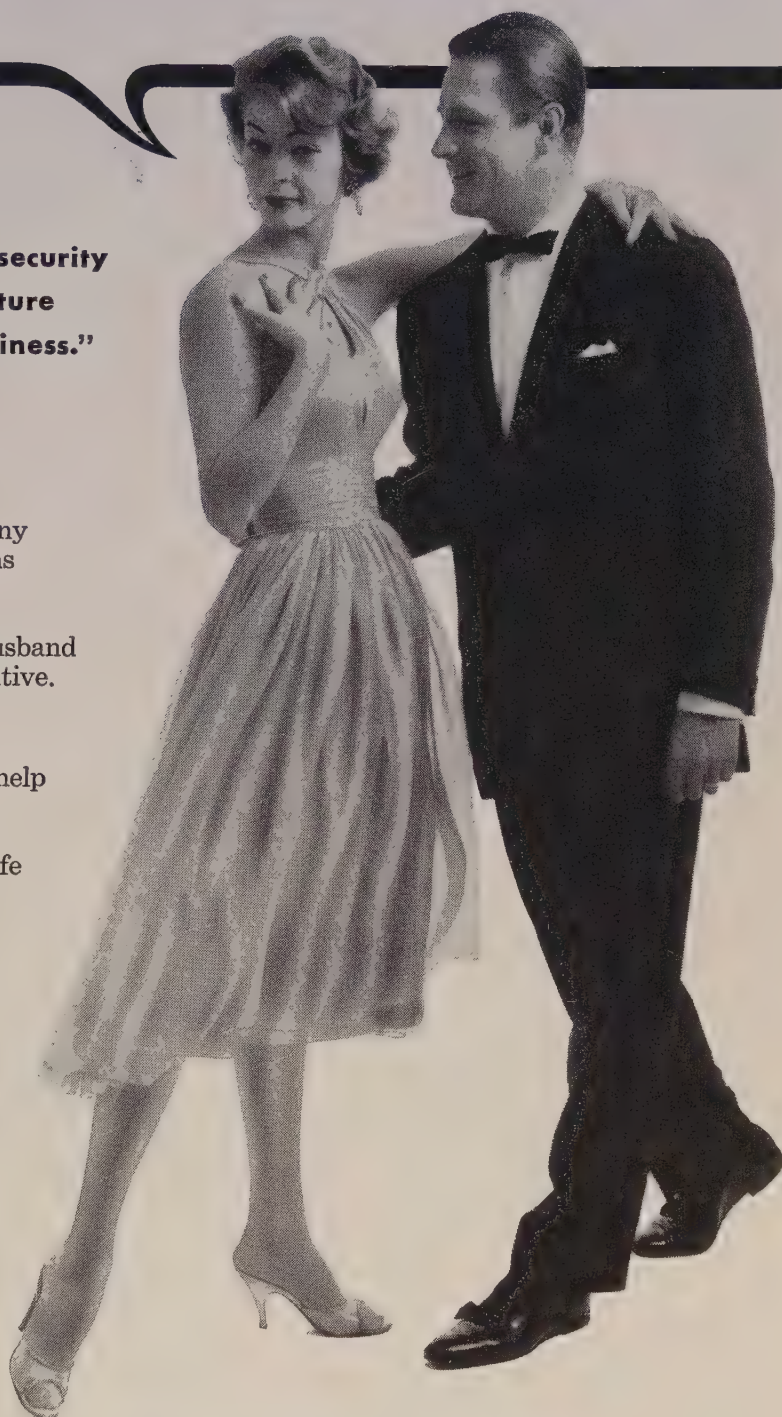
Borg-Warner® INDUSTRIAL CRANES

1550 S. PAULINA STREET, CHICAGO 8, ILLINOIS

Export Sales: Borg-Warner International, 36 South Wabash Ave., Chicago 3, Illinois

Why **SHOULDN'T** I be interested in business life insurance?

**"My family's future security
depends upon the future
of my husband's business."**



A death can shake the very foundation of any business and cause serious financial problems to the families which rely on it. That's why business life insurance is important to every woman, whether her husband is an owner, partner, stockholder or key executive. The future of the firm often depends on business life insurance.

Ætna Life's Business Planning Service can help your attorneys for efficient transfer of your business estate and increase its dollar effectiveness. Thoroughly trained Ætna Life representatives in 91 agencies from coast to coast are ready to offer you this unequalled service in planning your business life insurance.

ÆTNA BUSINESS LIFE INSURANCE PLANS ARE SPECIALLY DESIGNED . . .

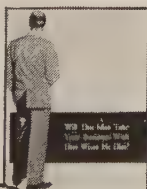
- To preserve **PARTNERSHIP** value when death comes to any partner.
- To preserve **SOLE PROPRIETORSHIPS** for heirs or selected employees.
- To preserve ownership values when death comes to any stockholder in a **CLOSE CORPORATION**.
- To indemnify any firm for the death of a **KEY MAN**.

Add Life to your Business with Ætna Business Life Insurance

ÆTNA LIFE INSURANCE COMPANY

Affiliates:

ÆTNA CASUALTY AND SURETY COMPANY
STANDARD FIRE INSURANCE COMPANY
Hartford, Conn.



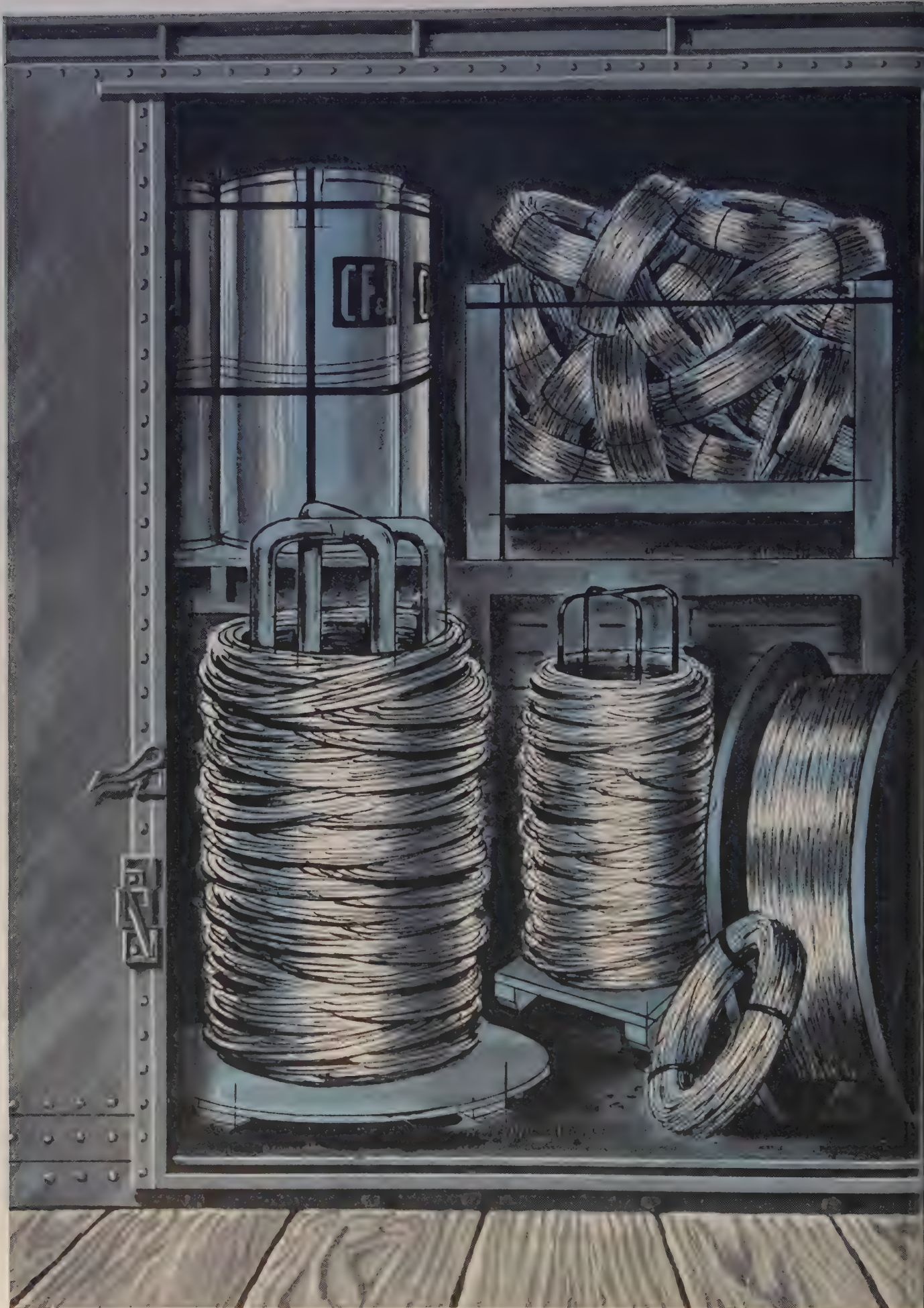
Ætna Life Insurance Company
Hartford 15, Connecticut

Gentlemen:

Please send me a copy of your new business life insurance booklet
"Will This Man Take Your Business With Him When He Dies?"

Name

Address





ASSORTED STEEL WIRE in **ONE** carload... from **ONE** source

From Armor Wire to Zig-Zag Wire, CF&I makes steel wire to meet thousands of specifications—packages it to meet any requirement—sells it by the coil or the carload.

You can simplify your purchasing by making CF&I your *source of supply*. Whether you need one coil of just one type of wire or a mixed carload of “assorted” wires, our newly enlarged and modernized wire mills and strate-

gically located warehouses can get it to you—fast.

We supply high or low carbon steel wire—round, flat or shaped—in a wide variety of sizes, tempers, grades and finishes — in steel-strapped or paper-wrapped coils; on spools, reels, “spiders” (holding up to a 4000-lb. continuous length of wire) or in fibre drums. Let us know your requirements.

CF&I-WICKWIRE WIRE

THE COLORADO FUEL AND IRON CORPORATION

THE COLORADO FUEL AND IRON CORPORATION—Albuquerque • Amarillo • Billings • Boise • Butte • Denver • El Paso
Ft. Worth • Houston • Kansas City • Lincoln • Oklahoma City • Phoenix • Pueblo • Salt Lake City • Wichita
PACIFIC COAST DIVISION—Los Angeles • Atlanta • Boston • Buffalo • Chicago • Detroit • New Orleans • New York • Philadelphia
WICKWIRE SPENCER STEEL DIVISION—Atlanta • Boston • Buffalo • Chicago • Detroit • New Orleans • New York • Philadelphia
CF&I OFFICES IN CANADA: Montreal • Toronto • CANADIAN REPRESENTATIVES AT: Calgary • Edmonton • Vancouver • Winnipeg

5757

COMPARE SPECS

and you'll see why your best crane buy is

P&H

TRAV-LIFT

(capacity 1 to 20 tons)

COMPARE FIRST... THEN SPECIFY

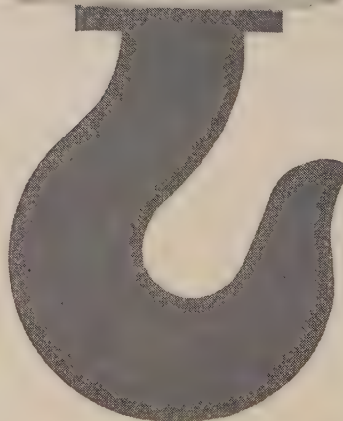
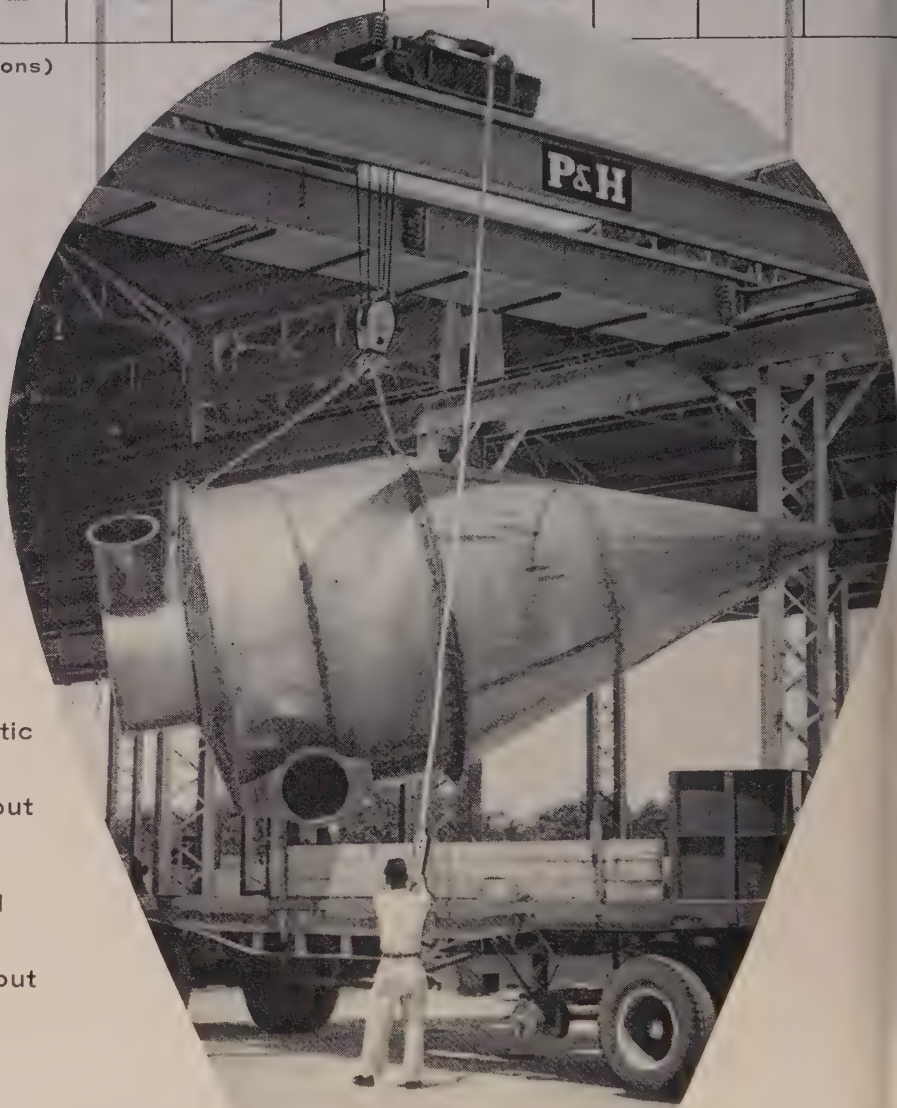
- P&H one-source responsibility for **all** parts and service
- Electrical equipment designed specifically for crane service
- DC rectifier brakes that cut maintenance in half
- Push button floor or cab operated...or both
- Variable speed 5-step magnetic control
- Anti-friction bearings throughout
- All-welded steel construction
- Bridge engineered for vertical strength and lateral stability
- Heat treated gearing throughout
- Forged steel wheels

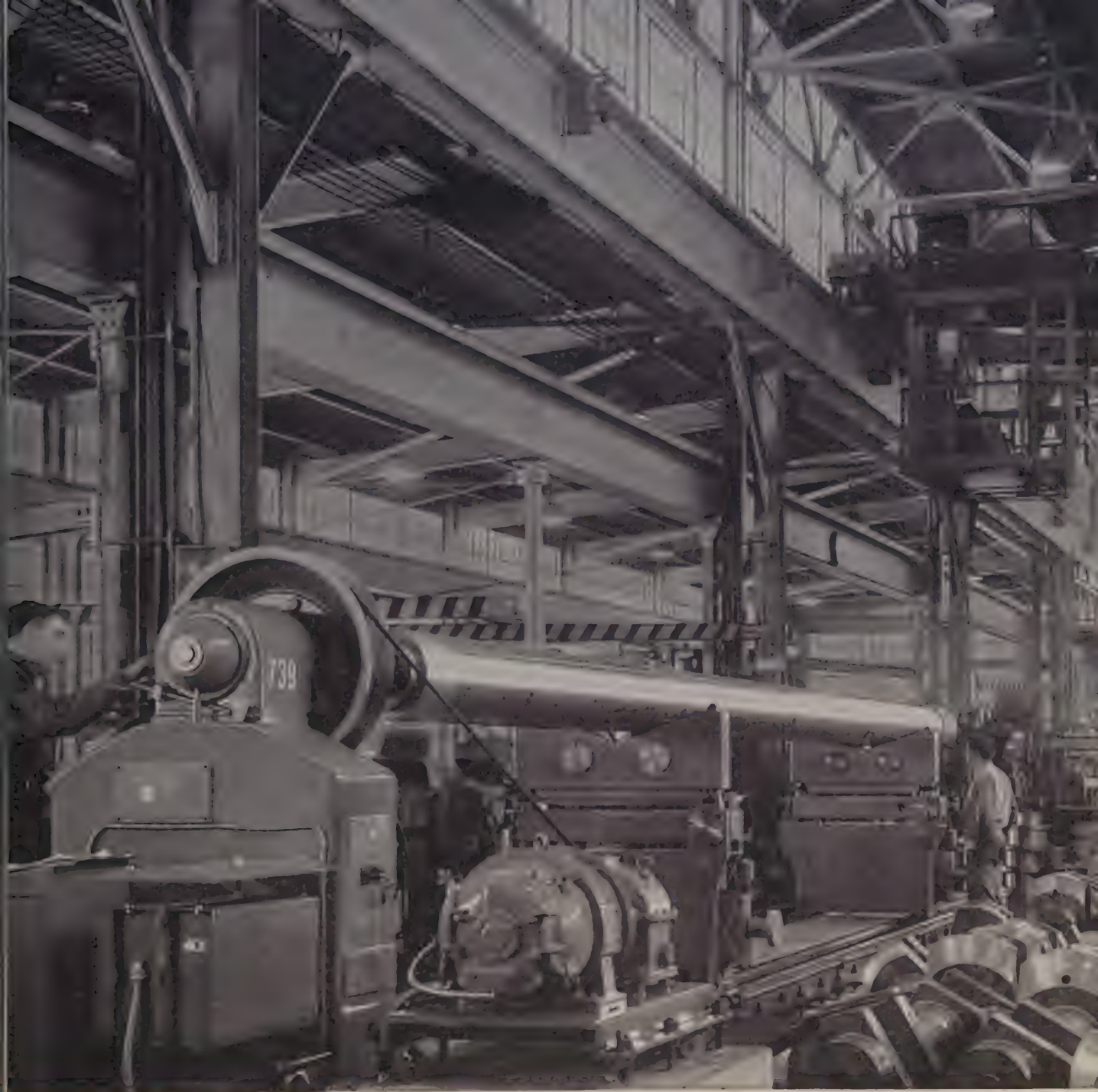
Only P&H Trav-Lift offers all these quality features in the 1 to 20 ton crane class. Yet because it is standard-built from mass produced parts, you can own a Trav-Lift for far less money than you think! Find out more — write for Trav-Lift Bulletin C-51 to Dept. 117E, Harnischfeger Corp., Milwaukee 46, Wisconsin.

HARNISCHFEGER



... quality and service for 74 years





WHO FORGES THE TOUGH ONES? and dynamic balances them, too?

To further National Forge's reputation for producing precise forgings, we've installed one of the largest, most accurate dynamic balancing machines in use. Our American-Trebel has a 33,000-pound, 60-foot capacity.

Pictured on the machine is a 42 ft. propeller shaft that has been forged, machined, and hollow bored—all operations done in our National Forge plant. NFO specialists are shown balancing this 15,500 lb. shaft to within 730 ounce-inches in two planes.

If you want one responsible source to produce and control the quality of your forgings... from melting and forging the steel through machining and dynamic balancing... call National Forge. Let us quote on your next job—and *prove* "who forges and dynamic balances the tough ones... best!"



**NATIONAL
FORGE** & ORDNANCE
COMPANY

IRVINE, WARREN COUNTY, PA

For information on the "tough" ones and the machinery that makes them best, write for Bulletin NFO3.

Burroughs' Unique Tests and Johnson Wire

Build Quality, Long Life in Business Machines

**Detroit Plant Develops Own Devices
For 100% Tests of Music Wire Springs**

Burroughs Corporation demands music spring wire as thin as a spider web's strand but with a minimum tensile strength of 439,000 pounds per square inch.

Then—to make sure it gets what it orders—the Detroit business ma-

chine manufacturer does 100 percent testing of all wire coming into its plants. Burroughs goes further than standard test equipment would permit and has developed its own special testing devices.

Burroughs' insistence on enforcing

specifications is the kind of quality challenge on which Johnson Steel & Wire Company thrives. A customer's emphasis on quality wire complements Johnson's own skill and care given to producing the best in specialty fine wires.

Johnson Steel & Wire has become Burroughs' major music spring wire supplier because Johnson's wire passes 100 percent inspection with flying colors.

At Burroughs, where a monthly production of 3½ million precision springs of music wire is not unusual, close attention must be given to everything affecting performance of the finished spring. Failure of even the simplest spring could disable an adding machine, cash register, calculator or any of the dozens of different business machines Burroughs makes.

For its new machines, as well as service parts for older models, Burroughs makes 1,300 different kinds of springs. Music wire required for them ranges from .005-inches in diameter (with minimum tensile strength of 426,000 psi) to the largest diameter used—.106 inches in diameter, (with a minimum tensile of 268,000 psi).

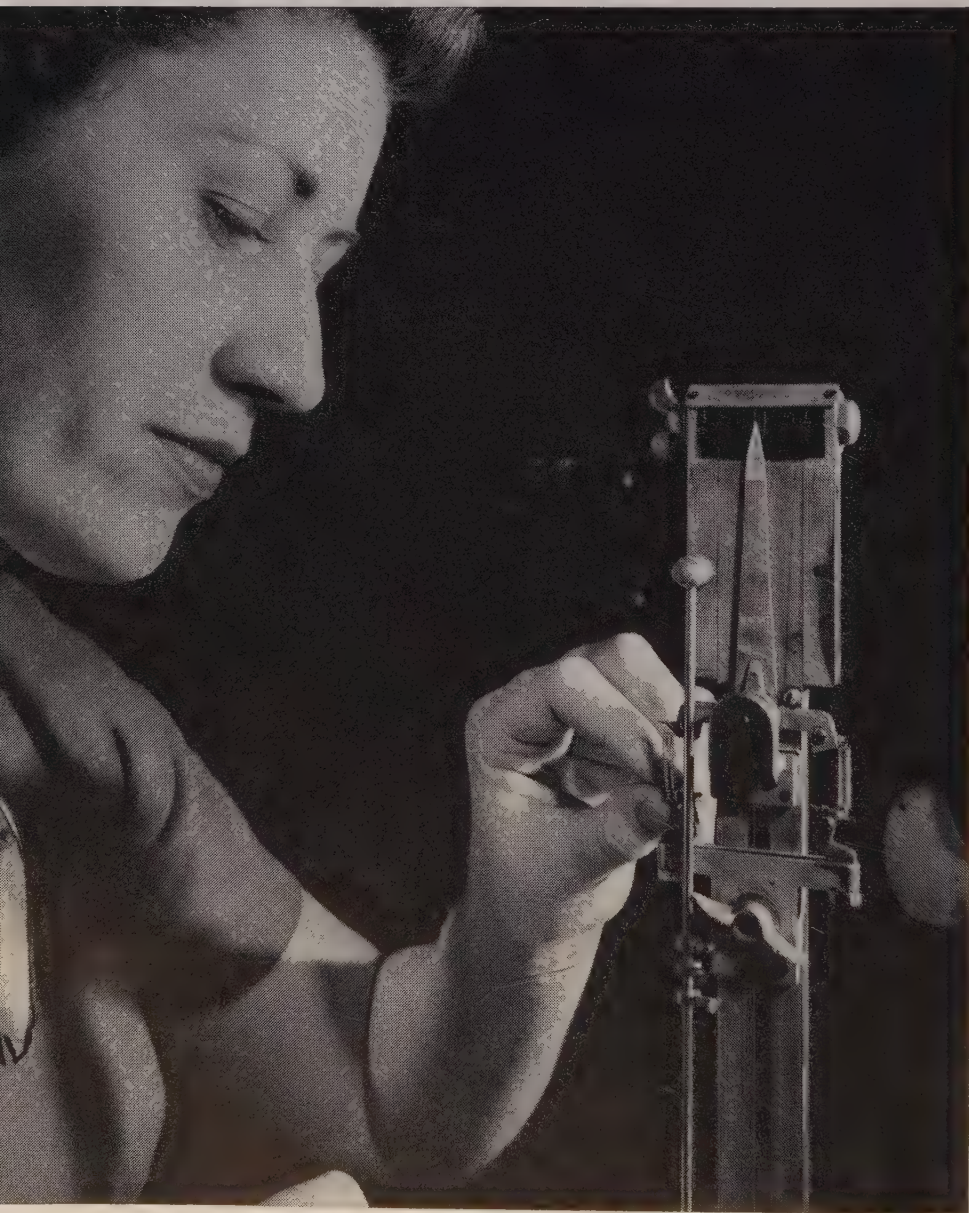
Here's what Burroughs wants from music spring wire, in addition to tensile strength:

The coating, in the case of tin-coated music spring wire, must be uniform and adherent to eliminate peeling, cracking or flaking during coiling.

- **High physical qualities**, uniformly cast and smooth, lustrous surfaces are another must so that uniform springs, within dimensions and capable of carrying assigned loads, can be produced.

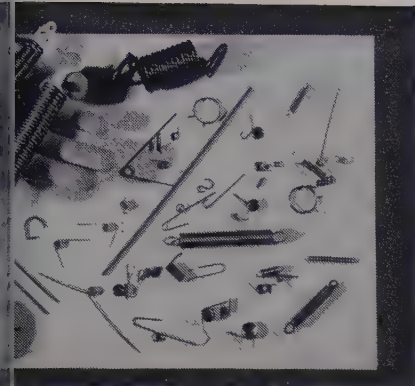
- **Accuracy of dimensions** greatly affects spring coiling and spring performance. Burroughs' tolerance specifications are met consistently by Johnson's wire.

- **Straightness requirements** for pre-straightened wire call for a three-foot length of wire cut from



Precision springs, made from Johnson Steel & Wire Company's music spring wire, get 100 percent testing on unique testing machines like this. Designed and built by Burroughs, this machine verifies a spring's load-carrying capacity at various extensions. If any modification is needed, correction can be made while spring is still on test device.

(Advertisement)



Here's some of the approximately 1,300 different kinds of springs which Burroughs Corporation manufactures from Johnson Steel's music spring wire.

coil to be straight within 4 inches for .013-inch diameter wire and straight within 3 inches for wire .014-inch diameter and larger.

Coilability is assured in the music spring wire Burroughs buys. Burroughs specifies that wire (.105 inch in diameter and smaller) must meet this test:

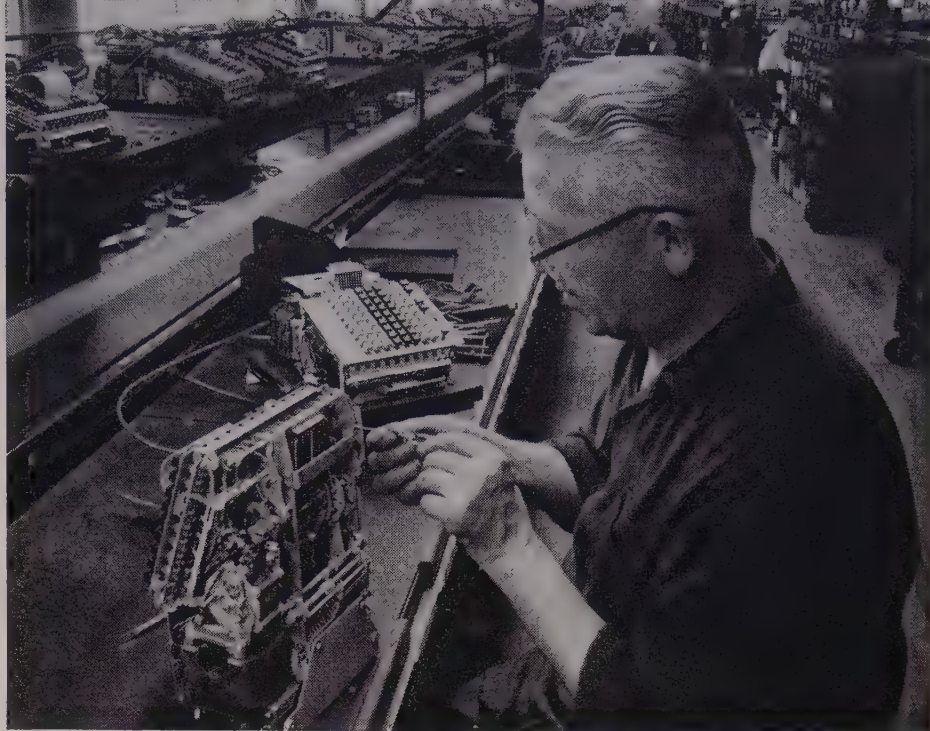
Wire is wound in a tightly closed spring to a coil length of 5 inches on an arbor 3 to 3½ times the diameter of the wire. When this spring is stretched so that it sets to 3 times its original length, the coils must show a uniform pitch with no splits or fractures in the wire.

Testing completes the cycle which calls for highly skilled technicians coiling the best music spring wire available on the most modern equipment.

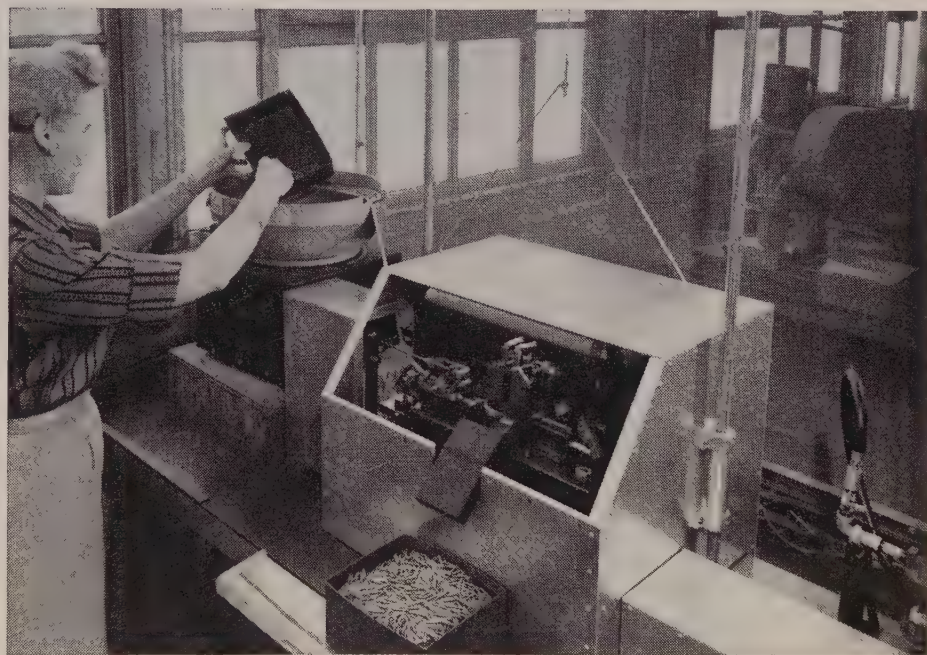
Testing machines, designed and built by Burroughs and used in addition to the standard machines, include the test fixture pictured here. This machine tests load-carrying capacity of springs. If any corrections are needed, they can be made while the spring is still on the test device.

Burroughs' careful attention to specs, its quality control and its testing procedure—plus its confidence in Johnson's music spring wire—are proof that Johnson can meet the toughest music wire demands.

Putting Johnson's music spring wire on your production lines starts benefiting you immediately. A corps of skilled wire engineers is as close as your telephone. Get in touch today with any of the district sales offices listed at right.



Several hundred music wire springs have been installed in this portable Burroughs adding machine. Every spring is critical, says Burroughs, because even the smallest spring failure could disable the machine.



This automatic spring eye-forming machine was designed and built by Burroughs personnel. An operator is shown filling the hopper with coiled springs which will be given an eye at each end on this device.

Johnson Steel & Wire Company, Inc.

Worcester 1, Massachusetts

a subsidiary of **Pittsburgh Steel Company**

Grant Building

Pittsburgh 30, Pa.



District Sales Offices

Atlanta
Chicago

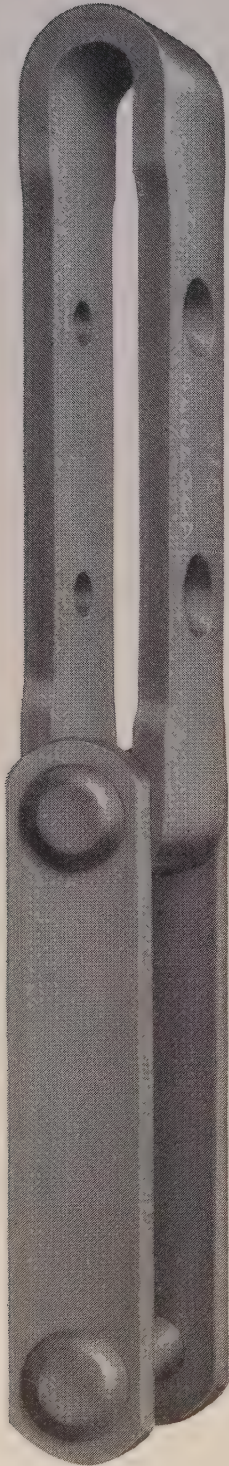
Cleveland
Dallas

Dayton
Detroit
Houston

Los Angeles
New York
Philadelphia

Pittsburgh
Tulsa
Warren, Ohio

- less wear on runways...
- longer life for chain



JEFFREY BARLOOP CHAIN

*Interchangeable with your
flat-and-round chain.
It is inexpensive and long-lived.*

Jeffrey barloop chain presents low bearing pressures to surfaces on which it slides. Serves well in handling of non-abrasive or semi-abrasive materials because the open strap construction makes it self-cleaning. No trapping of corrosive, abrasive materials being handled by the conveyor to accelerate pin wear.

Installing and modification of conveyors are simplified with Jeffrey barloop chain. It can easily be taken apart and put together at any point. There's less downtime for conveyor upkeep.

Ask your nearby Jeffrey distributor about Jeffrey barloop chain for general elevator and conveyor service. He can advise on and take care of most of your chain requirements. The Jeffrey Manufacturing Company, 889 North Fourth Street, Columbus 16, Ohio.





Maple St., Small Town, U.S.A.

A TOWN WHERE 'NOTHING EVER HAPPENS'...

A home town—like your town. A place where people said "it couldn't happen to us."

But it *did*. Like a whip, a great tornado lashed down Maple Street, splintering houses, leaving people hurt—homeless—panic-stricken.

A desperate call went out for the Red Cross and quickly, automatically, the team went into action.

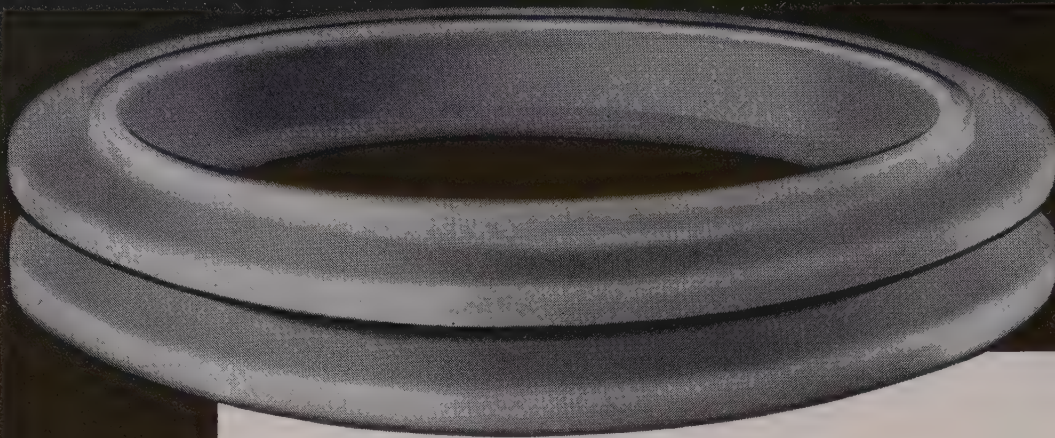
Red Cross nurses slipped into uniform . . . volunteers set up first aid stations . . . canteens fed the hungry. Later, Red Cross money and work helped rebuild the town.

Last year was one of the worst disaster years of this century, and the year before, 1956, was almost as bad. Every month and in every state, the Red Cross strained to the limit as hurricanes, floods, tornadoes, forest fires swept across the country.

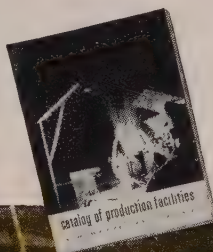
Red Cross receives no government funds—depends entirely upon *you* for support. Give as much as you can. Your dollars may go to your own town when it needs them most.

Join and Serve 

SPACE CONTRIBUTED BY **STEEL**



**Extruded Shape
Formed and Flash
Butt-Welded ...
the Low-Cost Way
to Make this 268 lb.
Stainless Steel Ring**



By using extruded or mill-rolled shapes and flash butt-welding, American Welding can frequently help customers slash production costs of their circular products over other methods of manufacture. Savings in expensive metals are substantial, plus sizable reduction in machining time. And where some of the more difficult metals to weld — such as titanium, aluminum, zirconium, stainless and heat-resistant alloys — are required, American Welding has the special knowledge and equipment to do those difficult jobs to your specifications.

The use of flash butt-welded rings, bands, and assemblies has saved millions of dollars for jet engine manufacturers ... why not investigate what economies it can mean to you. If it's circular and of metal — call American Welding first!

NEW PRODUCTS CATALOG AVAILABLE. Write today for 20-page catalog illustrating the many types of circular products American Welding can form, weld and machine for you.

AMERICAN WELDING

THE AMERICAN WELDING & MANUFACTURING CO.
110 DIETZ ROAD • WARREN, OHIO

Metalworking Outlook

Pressure on Depreciation Mounts

Pressure is mounting in Congress for temporary relief from our strait-jacket depreciation laws. But it's still nip and tuck whether this Congress will accept an antirecession measure such as STEEL proposes (Apr. 28, Page 55). Sen. Homer E. Capehart (R., Ind.) has just introduced a bill. From Jan. 1, 1958, to Dec. 31, 1959, it would cut in half Bulletin F estimates of useful lives of property where the period doesn't exceed 15 years. If greater than 15, the measure would cut in half the first 15 years and reduce the remaining life by two-thirds. It would apply in cases where the present useful life is at least six years. The proposal would have nearly the same effect as STEEL's suggestion for a temporary return to five-year amortization. Rep. Richard Simpson (R., Pa.), member of the tax-writing Ways & Means Committee, is expected to introduce the Capehart measure in the House.

What the UAW Wants

Here are demands the United Auto Workers made before its tactical switch last week (see Page 52): 1. Across-the-board wage hike of more than 10 cents an hour. 2. Additional special wage increases in the form of job class differentials costing an estimated 12 cents an hour. 3. Additional holiday, vacation, and overtime payments estimated at 9 cents. 4. A 13-cent boost in pension benefits, including a cost-of-living adjustment of pensions. 5. Added insurance benefits worth 2 cents. 6. Indirect wage costs (overtime and shift differentials) resulting from wage demands to cost more than 3 cents. 7. Some 248 changes in the working agreement. Total cost: 73 cents an hour, not counting 9719 demands from locals for items like paved parking lots that add up to more than 24 cents an hour.

The Status of Autodom's SUB

In making demands to automakers, the UAW reveals the status of SUB funds and points out that a substantial amount of payments have come from accumulated interest. It offers that as proof that SUB payments can be extended. Contributions are from June, 1955, to March, 1958. (All dollar figures in millions.)

	Total Contributions	Total Payments	% Paid From Interest	Total Assets
GM	\$97.9	\$7.0	61.1	\$95.1
Ford	40.0	4.5	39.5	37.3
Chrysler	27.0	6.0	12.1	21.8

Jobless Pay Reserves High

The dollar value of the total reserves of the 51 jobless pay systems in the U. S. grew from \$8.3 billion in 1953 to \$8.7 billion on Jan. 1, 1958. The nationwide reserve ratio at the end of 1952 was 6.3 times the 1948-1952 average annual cost rate. In December, 1957, reserves were only 5.4 times

Metalworking

Outlook

the average annual costs of 1953-57, reports National Industrial Conference Board.

New York and SUB

A new unemployment insurance benefit law just enacted in New York poses SUB problems in that state. The measure hikes jobless pay from \$36 to \$45 and makes the higher benefits retroactive to last July 1. Some 3000 unemployed steelworkers and an undisclosed number in other industries paying SUB must repay part of the SUB they have received.

Hands Off for U.S. in Steel

Don't look for government intervention in any steel wage-price hassle. Chances are that the industry would not boost prices July 1 if the union canceled 20-cent-an-hour higher wage costs expected for July 1. But the union again and again says it wants the increase. So a price boost is likely this summer.

AMC Stock Program Unique

American Motors Corp. has a unique employee stock program. Eight hundred of its Detroit salaried employees can have the firm deduct a minimum of \$40 each month or each quarter to be invested in any stocks the employee chooses. William C. Roney & Co., New York, is the brokerage firm handling the deal.

Gas Turbine Tractor

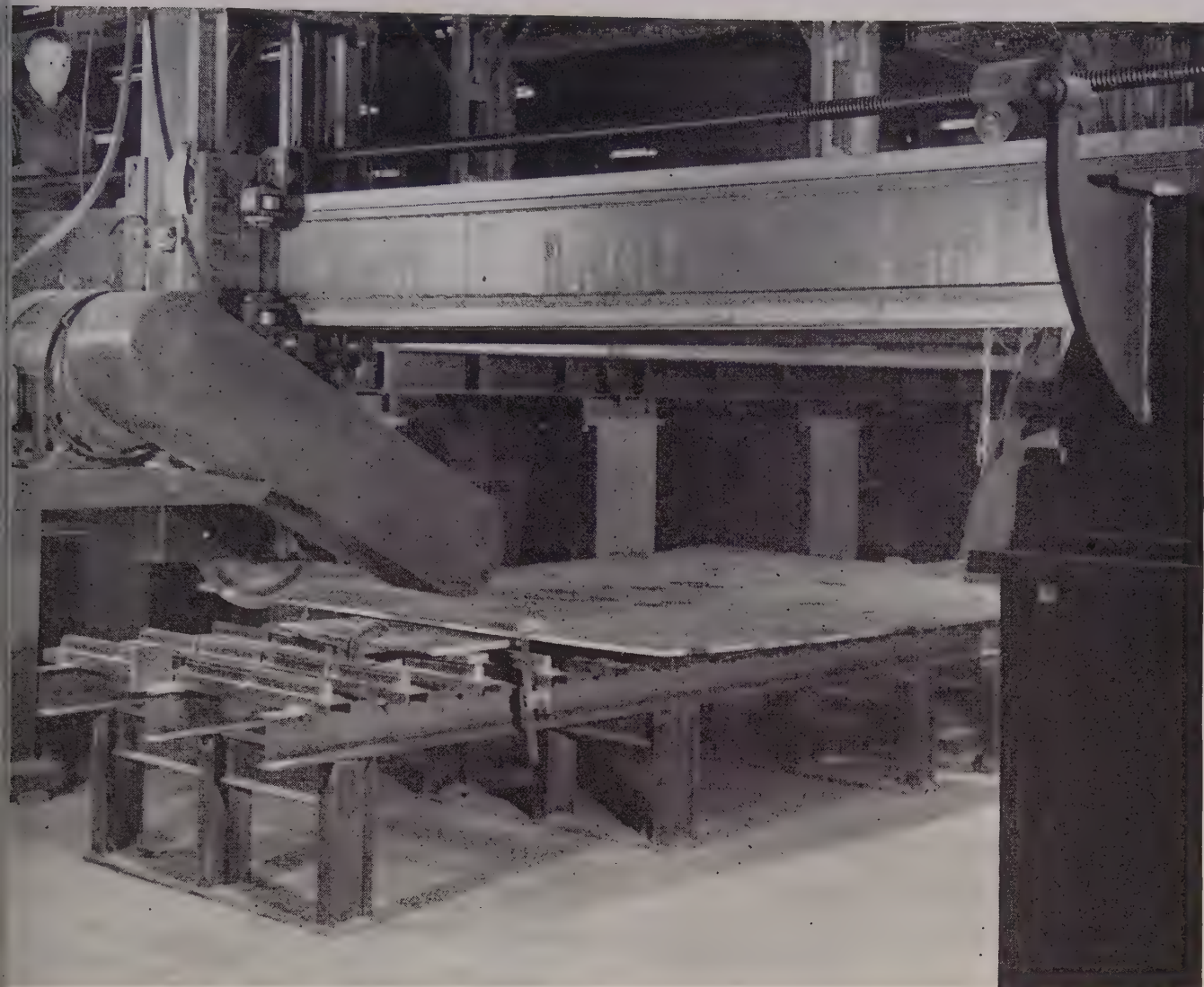
Allis-Chalmers Mfg. Co. has developed an experimental gas turbine crawler tractor. Tests are being made to determine whether it will match or improve upon its diesel counterpart. Design involves the equivalent of a built-in torque converter.

'59 Metal-Mineral Use To Rise

The consumption of metals and minerals in the U. S. this year will be about 10 per cent below the 1957 total. So predicts Assistant Secretary of Commerce Frederick J. Mueller. Use during the first quarter exceeded the 10 per cent lag behind last year, but Mr. Mueller expects a second-half improvement to balance off the first-quarter drop. He believes that the summer will start a period of increasing metal use. That pickup should continue through next year. Total consumption in 1959 is expected to be near the 1957 totals.

Straws in the Wind

American industry is in danger of pricing itself out of world markets, members were warned at the National Machine Tool Builders' Association meeting . . . A government committee will study General Electric Co. charges that imports of heavy electrical generating equipment threaten the national security . . . Lower first-quarter earnings will not affect Inland Steel Co.'s major expansion and modernization program this year . . . United States Steel Corp. has ruled out any immediate construction of a large taconite plant in Minnesota . . . Unemployment is now 7.5 per cent of workforce.



This special Ryerson saw assures square, parallel cuts and smooth edges on stainless plate . . . width and length tolerances $\pm 1/32"$

The plus you get when it's stainless from Ryerson

WIDEST SELECTION—No other source comes close to offering a comparable range of stainless types, shapes and sizes—so you can always get exactly what you need.

UNIQUE SERVICE—Big-capacity abrasive saw assures the ultimate in cutting accuracy . . . and shearing, hack-sawing and flame-cutting facilities also meet exacting requirements.

EXPERT TECHNICAL HELP—Ryerson specialists are always ready to work with you on any problem of stainless selection and fabrication.

No wonder more people buy more stainless from Ryerson than from anybody else.



Skilled operators and perfected techniques enable Ryerson to flame-cut special shapes and heavy plate to an exceptional degree of accuracy.



RYERSON STEEL®

Member of the  Steel Family

Principal Products: Carbon, alloy and stainless steel —tubing, bars, structurals, plates, sheets —aluminum, industrial plastics, metalworking machinery, etc.

JOSEPH T. RYERSON & SON, INC. PLANTS AT: NEW YORK • BOSTON • WALLINGFORD, CONN. • PHILADELPHIA • CHARLOTTE • CINCINNATI • CLEVELAND • DETROIT • PITTSBURGH • BUFFALO • INDIANAPOLIS • CHICAGO • MILWAUKEE • ST. LOUIS • LOS ANGELES • SAN FRANCISCO • SPOKANE • SEATTLE

The PROOF of DSC STEEL is in its PERFORMANCE **ON YOUR JOB**



▲ Unreeling ACSR cable, view looking west of King's Mountain, S. C.

ACSR INSTALLATION PHOTOS: COURTESY ANACONDA WIRE AND CABLE COMPANY, HASTINGS-ON-HUDSON, N. Y.

▼ Installing ACSR cable, Catskill Mountains, N. Y.

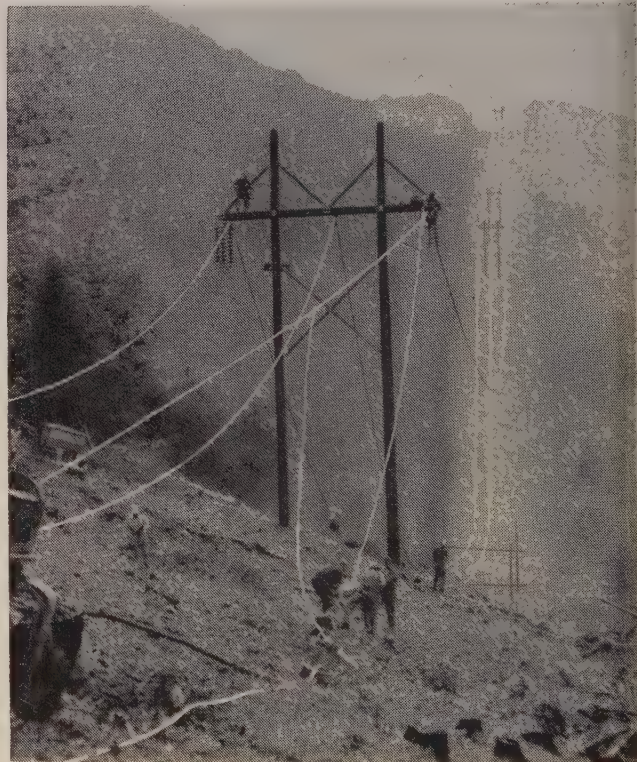
DSC ACSR* Core Wire and Aluminum Cable join strands to cut power transmission costs

Light weight, high current carrying capacity, are engineering and economic advantages of aluminum cable . . . ideal for high-tension overhead power transmission lines.

ACSR cable's ability to support itself over long spans and to resist the destructive forces of temperature extremes, wind, ice and lightning—depends on ACSR Core Wire . . . a hard drawn, high carbon (0.50 to 0.75%), high tensile (190,000 psi min.), heavily zinc-coated Specialty Wire . . . as produced by our Portsmouth Division in accordance with ASTM B 245-55 for major aluminum cable manufacturers.

- * { For the cable fabricator—ACSR means Aluminum Conductors, Steel Reinforced
 { For the wire producer—ACSR means Aluminum Cable Strand Reinforcement

For more information on ACSR Core Wire . . . or about other DSC Rod and Wire products . . . or DSC Sheet and Strip steel—please write our G.S.O. or call your nearest DSC Customer "Rep" . . . today?



Customer Satisfaction Is Our Business

DSC MILLS AND PRODUCTS PORTSMOUTH DIVISION, PORTSMOUTH, O.

Coke • Coal Chemicals • Pig Iron
 Basic OH Steel Ingots • Blooms • Slabs • Billets • Rods
 Hot Rolled and Cold Rolled Sheets • Low and Medium Carbon
 Manufacturers' Wire • High Carbon Specialty Wire • Aluminum Cable Strand
 Reinforcement • Rope Wire • Tire Bead Wire • Welded Wire Fabric

MILL DIVISION: DETROIT, MICH., HAMDEN, CONN.

Cold Rolled Carbon Steel Strip
 Flat Cold Rolled Carbon Spring Steel



COPYRIGHT 1958

DETROIT STEEL CORPORATION

GENERAL SALES OFFICE, DETROIT 9, MICHIGAN

CUSTOMER "REP" OFFICES:

Charlotte, N. C., Chicago, Cincinnati, Cleveland, Columbus, Ohio,
 Dayton, Ohio, Detroit, Grand Rapids, Mich., Hamden (New Haven),
 Conn., Indianapolis, Jackson, Mich., Louisville, Ky., Milwaukee, Wis.,
 New York, St. Louis, Toledo, Worcester, Mass., Winneconne, Wis.



May 5, 1958

DEPRECIATION POLICY

Model T In Space Age

AMERICA's industrial plant—its capacity and its efficiency—long has been the envy of the world.

But this country's depreciation policy, under which we attempt to maintain that plant, is among the most obsolete in the world.

Our concept of useful lives for machinery and equipment belongs to yesterday, before technology grew wings.

Our policy ignores inflation. What we recoup from depreciation is sadly inadequate to replace our equipment.

For contrast, look at what other countries—some industrial powers and some that only want to be—are doing:

- West Germany—Depreciation is negotiated with each company. The usual result is permission to write off 30 per cent of new investments in each of the first two years. Then the rate drops to 4 per cent so the remaining 40 per cent can be amortized over ten years. This liberal policy has had a lot to do with the spectacular postwar recovery of West German industry.

- India—To encourage new industries and help established ones, this country allows normal depreciation for plant and equipment ranging from 7 to 25 per cent a year. In 1955, she introduced an outright development rebate of 25 per cent on the cost of all new machinery and equipment installed after Mar. 31, 1954. The concession is in addition to normal depreciation and makes it possible for the investor to recover up to 125 per cent of his original cost of facilities.

- Brazil—Revaluation is permitted. Machinery may be amortized at 10 per cent per year.

- France—Has inflation coefficient to revalue assets and sanctions depreciation on a replacement basis.

- Japan—Passed revaluation laws for depreciable assets in 1950, 1951, and 1953. A government price index is used. Future depreciation is based on stepped-up value.

- Argentina—Permits 50 per cent of cost to be written off the first year.

- Australia—Lets industry fix rates if it can justify them.

- Canada—Gives machine tools a depreciable life of five years.

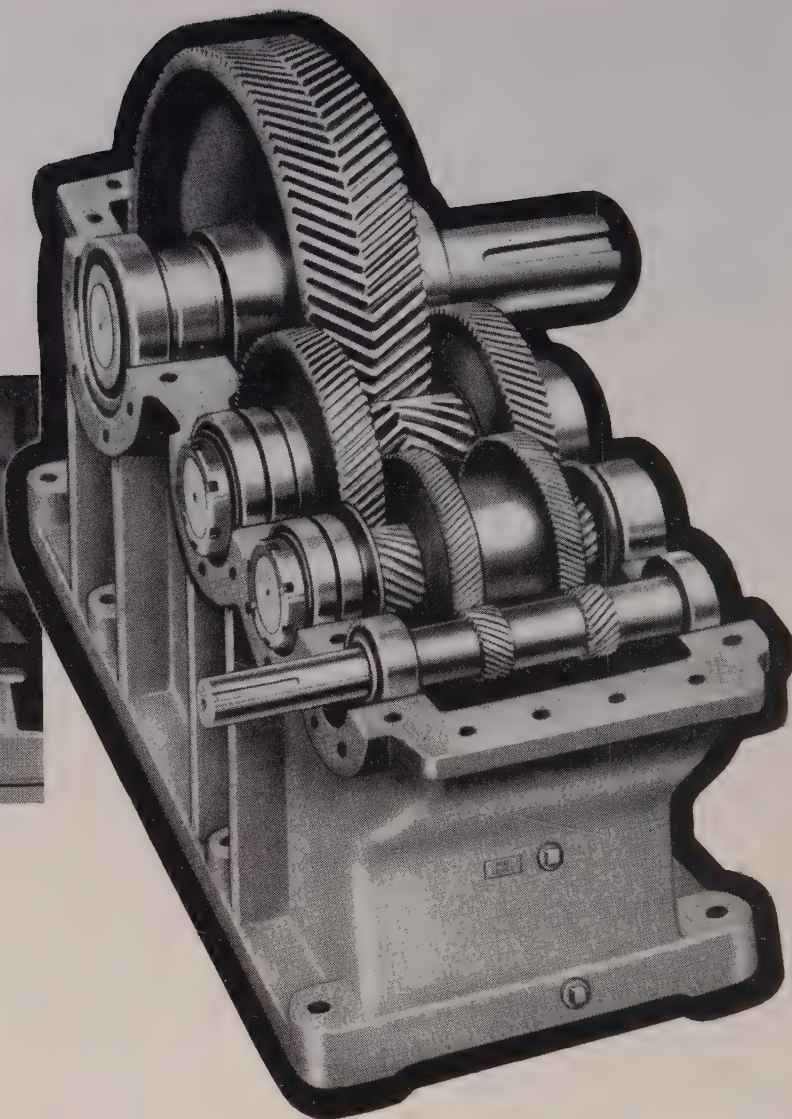
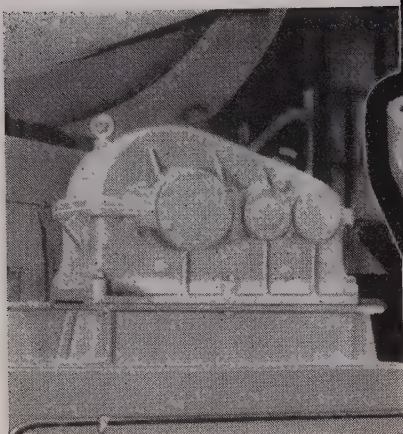
- Sweden, Great Britain, Mexico, Norway, Italy, and other countries have legislated depreciation reforms.

Why haven't we?

Is all the inertia the fault of politicians? Or is industry waging an ineffective campaign?

Walter J. Campbell

EDITOR



THE HEAVIER THE LOAD . . . THE MORE YOU NEED PHILADELPHIA HERRINGBONE REDUCERS

Heavy repeated shock loads . . . high horsepower . . . round-the-clock operation . . . put them together and you have the kind of a job where Philadelphia Herringbone Reducers perform best. They will last longer and save your maintenance dollars because extra strength is built into every part . . . housings, shafting, bearings and gearing.

To be specific:

Housings are specially reinforced at points of greatest stress. Extra heavy bearings take shocks and heavy overhung loads in stride. Result: shaft alignment is accurate . . . and it stays accurate. Gears, pinions and bearings last longer.

To meet the specific needs of each application, gearing is specially designed and symmetrically arranged

in the housing. Result: the bearings on each shaft carry equal loads, shaft deflections are minimized, bearings and gearing have higher shock load capacity.

Pound for pound, horsepower for horsepower and dollar for dollar, you can't buy a herringbone reducer that will outlast a Philadelphia. They are designed with *your* heavy duty drive problems in mind . . . so that you will never have a drive problem.

Philadelphia Herringbone Reducers are available in single, double and triple reduction for ratios of 1.75:1 to 292:1. Write today for your copy of Catalog H-55.

PHILADELPHIA GEAR CORPORATION
Erie Avenue and G Street • Philadelphia 34, Pennsylvania

philadelphia gear drives

Offices in all Principal Cities • Virginia Gear & Machine Corp., Lynchburg, Va.

INDUSTRIAL GEARS & SPEED REDUCERS • LIMITORQUE VALVE CONTROLS • FLUID MIXERS • FLEXIBLE COUPLINGS

Metalworking's First Quarter Earnings Plunge . . .

(Net Profit)

Selected Manufacturers	First Quarter	
	1958	1957
Allis-Chalmers Mfg. Co.	\$ 2,307,199	\$ 5,100,158
Aluminum Co. of America	11,458,810	18,594,086
American Brake Shoe Co.	1,044,933	2,496,877
American Machine & Foundry Co. .	2,678,000	3,474,000
Babcock & Wilcox Co.	2,000,000	3,774,000
Bliss & Laughlin Inc.	227,265	666,422
Borg-Warner Corp.	5,016,000	9,022,000
Burroughs Corp.	1,100,414	3,223,218
Chrysler Corp.	(a)15,139,802	46,545,521
Continental Can Co. Inc.	7,092,000	7,293,000
Douglas Aircraft Co. Inc.	8,595,949	8,772,755
Ekco Products Co.	734,308	890,290
Ford Motor Co.	22,700,000	100,500,000
Four Wheel Drive Auto Co.	181,083	113,968
General Electric Co.	49,184,000	64,006,000
General Motors Corp.	185,000,000	261,000,000
General Steel Castings Corp.	760,871	738,748
IBM Corp.	23,396,118	18,745,607
Johns-Manville Corp.	1,900,000	2,953,554
Kennecott Copper Corp.	11,651,594	27,785,579
Mack Trucks Inc.	1,138,509	3,016,470
National Cash Register Co.	3,661,816	3,836,928
National Lead Co.	8,952,326	14,772,815
Otis Elevator Co.	3,322,214	2,992,295
Pittsburgh Screw & Bolt Corp.	84,542	610,619
Polaroid Corp.	1,181,000	840,000
Reynolds Metals Co.	9,910,345	9,880,571
Rockwell-Standard Corp.	2,578,211	4,505,566
Square D Co.	1,435,858	2,523,152
Standard Forgings Corp.	17,401	379,774
St. Joseph Lead Co.	2,424,296	2,757,042
Sundstrand Machine Tool Co.	786,000	1,045,000
Sylvania Electric Products Inc.	1,167,818	3,069,944
Texas Instruments Inc.	1,109,000	790,000

Thompson Products Inc.	1,926,668	4,050,615
Timken Roller Bearing Co.	3,249,168	6,399,672
Union Carbide Corp.	22,832,616	35,454,638
Westinghouse Electric Corp.	12,903,000	14,198,000
(a) Net loss.		

Steelmakers Fare Worse

(Net Profit)

Selected Steel Companies	First Quarter	
	1958	1957
Alan Wood Steel Co.	\$32,967	\$899,000
Allegheny Ludlum Steel Corp.	725,900	4,790,665
Armco Steel Corp.	9,171,693	15,487,752
Bethlehem Steel Corp.	24,819,490	53,427,655
Carpenter Steel Co.	604,838	2,065,495
Colorado Fuel & Iron Corp.	(a)1,390,096	4,552,392
Continental Steel Corp.	580,839	662,262
Copperweld Steel Co.	(a)112,505	988,994
Crucible Steel Co. of America	172,395	3,372,606
Detroit Steel Corp.	(a)303,678	1,008,166
Eastern Stainless Steel Corp.	249,001	661,421
Granite City Steel Co.	2,055,182	3,421,451
Inland Steel Co.	7,961,147	14,613,704
Jones & Laughlin Steel Corp.	1,657,000	12,823,000
Kaiser Steel Corp.	1,734,426	7,784,118
Lone Star Steel Co.	482,638	3,288,951
Lukens Steel Co.	1,470,230	3,365,498
National Steel Corp.	3,801,426	13,501,506
McLouth Steel Corp.	454,037	3,431,813
Republic Steel Corp.	8,583,506	28,052,826
Sharon Steel Corp.	(a)283,213	1,592,644
United States Steel Corp.	62,426,679	115,478,109
Wheeling Steel Corp.	505,000	4,559,000
Youngstown Sheet & Tube Co.	3,576,100	10,607,267
(a) Net loss.		

So Companies Trim Costs

Inefficient facilities are retired.
Operations are centralized.
Salaried employees take pay cuts.
Production workers are laid off.
High efficiency equipment is installed.
Union demands meet stiff resistance.
Expense accounts are watched more closely.
Price shopping becomes widespread.
Overtime is reduced or eliminated.

And Push Marketing

Special promotions are staged.
Sales territories are widened.
Sales calls are more frequent.
New distribution channels are sought.
Below-par salesmen are eliminated.
Credit terms are liberalized.
Product design is improved.
New product development is accelerated.
Replacement sales get more emphasis.

Profit Outlook Still Dim

METALWORKING'S profits plunged in the first quarter, prompting management to accelerate cost reduction programs and re-examine marketing structures and practices. Goal: Improve break-even points.

Twenty of 24 steelmakers (see above) made a profit in the first quarter despite an industry operating rate that averaged only 54 per cent of capacity. Detroit Steel Corp., which operated at 37 per cent of ca-

capacity, had a \$303,678 net loss. M. J. Zivian, president, asserts that a difference of 6 or 7 percentage points would have kept the firm in the black. "A rate of 60 to 65 per cent will make a good profit," he adds. Inland Steel Co. averaged 69 per cent (vs. 104.1 a year ago). Profits dropped 45.5 per cent. Republic Steel Corp.'s rate was about 46 per

cent, vs. 93.3 per cent in '57's first period. Its earnings dropped nearly 70 per cent. Allegheny Ludlum Steel Corp. had net income of \$725,900 (vs. \$4.8 million a year ago) at an operating rate above 50 per cent. It's now "pushing a vigorous cost reduction program."

Casualty List—Among industries where profits dropped most: Steel-making, automotive, machine tools, nonferrous metals, steel fabricators, heavy machinery. Some groups slipped less: Electrical equipment, instruments, aircraft. Only a few smaller industries showed gains.

Which Way Now?—Some plants have trimmed inventories to the point where an uptrend in business would be immediately translated into orders for materials and components. But many still have a lot of reducing to do (See Page 125).

Up?—Machine tool orders have improved (builders wonder if it's temporary); and some companies in other industries see signs of improvement:

Ralph J. Cordiner, chairman, General Electric Co.: "Sales billed in March increased sharply, but it's too early to know if a trend of this magnitude can be sustained."

Alva W. Phelps, chairman, Oliver Corp.: "March sales ran about 30 per cent ahead of those in the year-ago month." George M. Humphrey, chairman, National Steel Corp.: "The economy is coasting along on what seems to be the bottom; the next move should be upward."

Down?—While the second period may bring improvement over the first, it won't approach year-earlier heights. For some firms, it will bring a deeper slide. Roy C. Ingersoll, chairman, Borg-Warner Corp., says: "Considerably less earnings the rest of the year are in prospect."

Sidewise?—Some executives share the view of A. King McCord, president, Westinghouse Air Brake Co., who expects sales and earnings to fluctuate around current levels for the rest of the year.

Profit per sales dollar could be better in the second period—barring extreme wage increases or an epidemic of price cutting. Cost reduction programs started in late '57 and early '58 are beginning to show results. And by now, many companies have cut back operating costs to more closely reflect sales volumes.

UAW's Pitch: A Stall or a Face Saver?

Mr. Reuther Asks . . .

Extend contract three months and:

1. Grant more jobless protection with liberalized Supplemental Unemployment Benefits (SUB).
2. Cut car prices.
3. Seek a cut in excise taxes on autos through joint union-industry efforts.

Companies Offer . . .

Extend contract two years and;

1. Continue cost of living and annual improvement factor.
2. Establish trust funds in states where SUB is invalid.
3. Help UAW rebate strike fund dues.

Compromise: One Year Pact?

AUTOMAKERS are pretty sure the UAW will settle before contracts expire. General Motors Corp. has served notice that it intends to terminate its contract on May 29. Ford Motor Co. and Chrysler Corp. are following GM's lead.

Detroit thinks an obvious settlement point is a one-year contract with automatic wage and cost of living increases, longer SUB pay periods, and maybe a trust fund deal for states that won't accept SUB.

It looks like talk of price cuts will wither. The union, having planted its profit sharing seed, now can sit by and let it germinate until the economic climate is more favorable.

Labor circles believe that new demands mean the union is already backing away from its stand. Walter Reuther, who is over an economic barrel, may settle closer to company terms. But he hopes to salvage some propaganda material (at least for his members) by blaming management for high prices, unemployment, and the recession.

Face Saver—His statement is a tipoff to his tactics: "What is required is a gigantic clearance sale with prices slashed to move cars out of showrooms into consumers' garages. That would open the way for an increase in production and the re-employment of thousands of

workers. Their purchasing power, in turn, would give upward impetus to the economy as a whole."

That thinking has some loopholes. Example: The Reuther plan requires cutting excise taxes. And as Prof. Daniel B. Suits, University of Michigan economist, has said: "Prices aren't the most important factor determining the car market. Consumer income and the total number of cars on the road have a much greater effect."

Stall Unlikely — The law says companies must listen to any reasonable proposal even though contracts have terminated. The union strongly hints it may pursue stalling tactics to hold out until the model changeover period when companies would be hurt most by a strike.

But the longer Mr. Reuther stalls, the more propaganda benefits companies gain. They can point out how labor is abetting unemployment and inflation by demanding more than firms can give.

Claims Harlow Curtice, GM president: "Prolonged jockeying by the union . . . would retard economic recovery by further undermining public confidence. . . . The problem is to halt wage increases which are not earned and which breed more and more inflation." See the list of UAW demands on Page 45.

Shipbuilders Run Aground?

Cries of woe from builders are countered by the need for a modern U. S. merchant fleet. Will Congress pay the bill? No decision is likely until backlogs are worked down

U. S. SHIPBUILDERS have lost orders for over 500,000 deadweight tons in the last three months, reports one of the nation's leading firms. Amounting to about \$140 million, that's better than a 10 per cent cut in workloads. While the decline is not too precipitous, most shipbuilders view it as the beginning of their troubles. Present workloads amounting to over \$1 billion (see table below) will be finished in 1959-60. A tremendous upsurge in new orders will have to come to keep the industry from falling into a major depression by the early 1960s, the builders believe.

Foreign Influence—The lost tonnage is mostly in foreign orders. Up to 1956, foreign buyers supported the U. S. industry. In the last two years, the revamping of the American merchant marine has helped our builders; now they say a much bigger U. S. program is about all that can save them.

Foreign Competition — Foreign yards are fairly well filled through 1964, but foreign buyers, instead of turning to U. S. yards, are willing to wait until European and Japanese yards can handle their orders. They produce ships at about half the cost of U. S. yards and can turn them out faster.

Another Opinion — That's the most pessimistic point of view. Many of the country's east coast builders and the Shipbuilders Council of America, New York, adhere to it. But listen to Berney Wilburn, acting director of research, American Merchant Marine Institute Inc., Washington.

"If we are going to have an ocean-going fleet at all, U. S. builders are assured of substantial business through the next decade," he says. He charts calmer seas: 1. About 80 per cent of our fleet is of World War II vintage (13 to 17 years old) and must be replaced in the next decade if U. S. flag shippers intend to stay in business. 2. The 15 federally subsidized operators (Un-

cle Sam pays for about 40 per cent of the cost of ship replacement) are under contract to replace their ships when they are 20 years old; the Maritime Administration figures this will amount to 30 ships a year for U. S. builders. 3. About 85 per cent of the U. S. tanker fleet is in the domestic trade and must be U. S. built by law.

Mr. Wilburn believes the bulk of the U. S. fleet will be replaced in the next decade. Most optimistically, that could average out at about 90 ships a year for U. S. yards.

Congress Will Decide—While a

world-wide boom in the '60s would probably solve U. S. builders' problems, most shipbuilding sources look to Congress for an answer. A Capitol Hill source on the House side doesn't give too much encouragement: "The builders always cry."

That authoritative source believes most of the screams are from easterners who are losing tanker orders—west coast yards are getting orders for the first time in years.

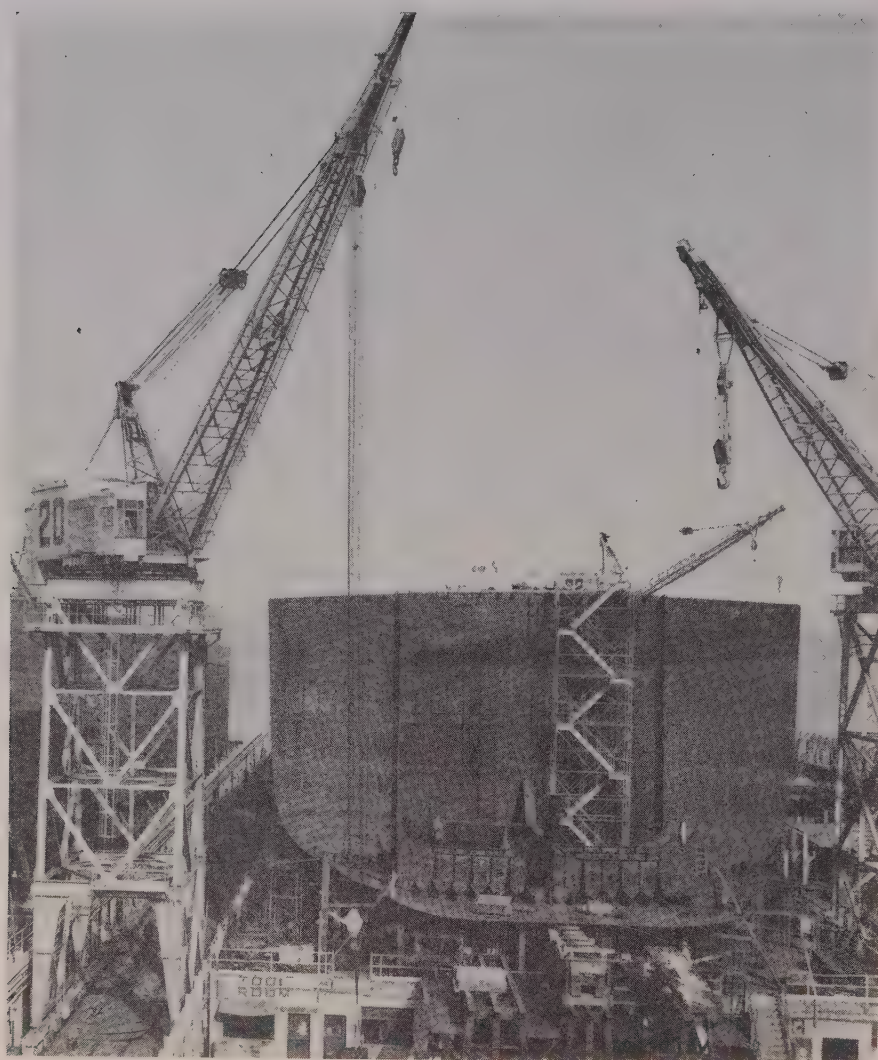
Summing Up—Seven major yards are ready to grab any order they can find; perhaps a dozen yards would like to stay in the business. Thirty ships a year from the Maritime Administration's replacement program won't support more than five yards at most. We will soon see another major decision in the history of U. S. economics. Plenty of observers are betting on a reduction in the number of builders before the end of the next decade.

Busy U. S. Shipbuilders*

(As of Apr. 1)

Name	Number of ocean-going merchant vessels under contract for construction		Value (Millions of dollars)	
	1958	1957	1958	1957
Bethlehem, Quincy, Mass.	13	17	\$201.1	\$270.6
Bethlehem, Sparrows Point, Md. .	19	26	201.3	241.4
Bethlehem, Boston	0	2	—	4.0
Bethlehem, Staten Island, N. Y. .	0	2	—	7.7
Bethlehem, Baltimore	0	1	—	1.8
Bethlehem, San Francisco	6	5	67.6	47.1
Newport News Shipbuilding	15	26	228.6	343.5
Ingalls	14	10	169.3	117.3
Sun	10	13	114.6	151.8
New York Shipbuilding	9	5	114.1	57.0
Maryland Shipbuilding	1	8	11.6	26.0
Avondale Marine	0	3	—	10.5
National Steel & Shipbuilding ..	3	0	29.3	—
Todd	2	0	22.0	—
TOTALS	92	118	\$1159.5	\$1278.7

*Both private and government orders are included. Great Lakes builders and conversions are excluded.
Source: Maritime Administration's figures.



One of the four tankers Bethlehem Steel Co.'s Shipbuilding Div. is constructing at San Francisco is symbolic of the humming industrial activity on the West Coast. The shipyard has enough work to keep it busy into second quarter of 1959

Watch the West Coast

Rapid growth of population offers many business opportunities. The recession is being cushioned there by industrial expansion and other construction projects

FOR business and sales opportunities, watch the West Coast—particularly California.

It is a "growth" area. Population is increasing sharply; industry is expanding.

Result: The West Coast is not feeling the recession as much as other regions.

California's population is multiplying twice as fast as any other state's—it's gaining an average of 1500 people a day. The California State Department of Finance pre-

dicts the state will have 16 million people by late 1960 and that before 1965 it will have the largest population of any state in the U. S. (California is now second; New York is first.)

Growing Market — California's rapid growth has put its steel consumption ahead of its production. The state is sixth in the nation as a consumer, but tenth as a producer.

This surging growth in markets is inspiring expansion of physical facilities—industrial plants, office

buildings, hotels, highways and bridges, to name only a few.

The Pacific Coast's three biggest steel producers—Kaiser Steel Corp., Bethlehem Pacific Coast Steel Corp., and U. S. Steel Corp.—are adding to their west coast facilities.

Kaiser Expands—Kaiser Steel, whose steel plant is at Fontana, Calif., (50 miles east of Los Angeles) is adding about 1.4 million net tons to its present yearly steel-making capacity of 1,536,000 tons. The increase will result from the installation of three L-D furnaces (also known as oxygen converters) which are expected to be ready for use late this fall. They will raise California's steelmaking capacity 42 per cent—to 4.7 million tons annually.

Bethlehem Expands—Bethlehem Pacific Coast is replacing the five small open hearths at its Seattle plant with two electric steelmaking furnaces. The project, to be completed this year, will raise the plant's steelmaking capacity from 246,000 tons annually to 420,000 tons and help boost the company's west coast capacity to around 1,230,000 tons—it's 1 million tons now.

U. S. Steel Expands—U. S. Steel's Columbia-Geneva Steel Div. is completing a third high-speed electrolytic tinning line at Pittsburg, Calif. It will boost the plant's annual tin plate capacity almost 55 per cent. To be ready for future expansion, the company has an option on about 600 acres adjoining the Pittsburg plant's present site (also around 600 acres).

In addition to installing additional facilities to make primary steel, Kaiser and Bethlehem Pacific Coast Steel are building related equipment, as well as constructing new home office buildings.

At Fontana, Kaiser Steel's expansion includes a fourth blast furnace, 90 more coke ovens, a new universal slabbing mill for the initial rolling of ingots, revamping of the 86 in., hot strip mill to increase output of hot-rolled sheets, a new electrolytic tin plate line which will double the mill's electrolytic tin plate capacity, and conversion of its 110-in. plate mill into a 148-in. mill.

At Seattle, Bethlehem Pacific Coast Steel's expansion includes a new 32-in. blooming mill, new soaking pits, improvements on the universal plate mill, a new 10 to 12-in.,

merchant bar mill, modernization of the metallurgical laboratory, and expansions at the roll shop.

Get New Offices—Both Kaiser and Bethlehem Pacific Coast Steel are erecting new home office buildings. A Kaiser Center building (28 stories) is underway at Oakland, Calif., the firm's home base. Bethlehem Pacific Coast Steel's new 15-story office building is under construction in downtown San Francisco. Moving of the steel division from the general office building at 40th and Illinois Streets in San Francisco will leave all its space for one of its present occupants, Bethlehem Steel Co.'s Shipbuilding Div.

Ship Ahoy—The shipbuilding division's outlook is the brightest since World War II. It has enough work on hand to operate at a good level at least into the second quarter of next year. It is building four tankers (32,650 tons each) and two passenger-cargo vessels and is converting the cruiser *USS Oklahoma City* into a guided missile ship.

Unusual for Unions—Encouraging to the shipbuilding division is the action west coast shipyard labor unions are taking. They are amalgamating so that a worker will be permitted to do more than one type of work in a shipyard. The unions are doing this to save jobs for their men by helping west coast shipyards compete with foreign yards.

Under Construction—The construction boom extends up and down the coast. Other companies are building new office buildings. In downtown San Francisco, steel is being erected for the 20-story Crown Zellerbach building, and the steel frame for the 12-story American Trust Co. building is completed. Hilton Hotels Corp. is to build a 1000 room, \$23 million hotel in downtown San Francisco. It also will build a 300-room hotel at that city's International Airport.

Several other hotels and bank and office buildings will be built in that city. Projects already announced for the San Francisco peninsula will cost around a half billion dollars.

In Los Angeles, a half dozen office buildings are under construction. At Portland, Oreg., and Seattle there is an increase in major multistory building construction, and several new hotels and office buildings are in the planning stage.

Seaton's Plan for Metals

Program calls for multimillion-dollar subsidy over a five-year period. Chances for passage appear slim. Tariff Commission split on lead-zinc recommendations

THE ADMINISTRATION'S answer to the domestic mining industry's pleas for relief came on Apr. 28 when Fred A. Seaton, secretary of the interior, presented to Congress a multimillion-dollar program to partially subsidize five metals. It calls for: 1. Cash payments to producers that would make up the difference between the market price of certain metals and a government-figured "stabilized" price. 2. More research and development on minerals.

Specifics—Secretary Seaton seeks a five-year program guaranteeing producers 27.50 cents a pound for copper, 14.75 cents a pound for lead, 12.75 cents a pound for zinc, \$48 a short ton for fluorspar (acid grade), \$36 a short ton unit for tungsten. Subsidies would be paid on a maximum 1 million tons of copper per year, 350,000 tons of lead, 550,000 tons of zinc, 180,000 short tons of fluorspar, and 375,000 short ton units of tungsten.

Under present market conditions, the program would operate like this: With zinc at 10 cents a pound, and the government guaranteeing 12.75 cents, Uncle Sam would be obligated to pay producers 2.75 cents for every pound of zinc sold. "The payment in each instance will be computed on the difference between the domestic market price and the stabilized price," Secretary Seaton said.

How Much?—The program is expected to cost about \$161 million the first year. "The total annual stabilization payment from then on should diminish as production responds to demand and as our economy resumes its long term health and vigor," says Secretary Seaton.

As the second major part of the program, Secretary Seaton said the administration will request the Budget Bureau to increase U. S. Bureau of Mines funds by \$5.5 million in fiscal 1959. Breakdown: 1. \$2.5 million for research and development on superduty refrac-

tories to contain fission and fusion reaction; high temperature metals and alloys for high altitude jet engines and rockets; special structural metals for nuclear reactors; and new uses for rare metals; 2. \$3 million for basic geologic research.

Battle Looms—The administration's measure will have opposition. Says one Senate source: "For Seaton's program to have been meaningful, he would have had to ask stabilized prices of at least 30 cents for copper, 17 cents for lead, 14 cents for zinc, \$52.50 for fluorspar, and \$42.50 for tungsten."

Reaction in the nonferrous industry varies. The biggest complaint among high tariff advocates is that the proposal would do nothing to hold down imports of foreign origin metal. Says one metalman: "With imports increasing, there's no assurance an industry could sell the maximum amount of metal allowed it under the plan."

On the other side of the coin, an importer poses this question: "What's to stop the domestic industry from lowering prices to freeze out foreign competition?"

Worry—The factor most troubling to domestic lead and zinc men is that this plan may be a substitute for the Tariff Commission's recommendations recently sent to the President. They fear it might hold up a decision on the commission's recommendations until his program is voted on.

Another factor: The recommendations are controversial. Commissioners split 3-3 on how much duties should be raised (although they agreed the industry needs relief) and on whether quotas should be imposed. Main points: The three Republican commissioners recommend a maximum increase in duties to 1.80 cents a pound for lead-bearing ores, 2.55 cents for lead pigs and bars, 1.80 cents for zinc-bearing ores, and 2.10 cents for zinc blocks, pigs, and slabs. The

three Democrats call for 1.50 cents for zinc-bearing ores and 1.75 cents for zinc blocks, pigs, or slabs.

Republican members also recommend that yearly imports of unmanufactured lead be held to 221,700 tons and unmanufactured zinc to 325,600 tons. The Democrats voted against quotas.

The President has these options: He can accept the recommendations of either side, reject both, or modify the proposals to suit himself. By law, he must make his decision within 60 days.

Reaction—A recommendation for higher tariffs had been expected by the industry, but the support for quotas surprised everyone. Reac-

tion was immediate from free trade advocates. American Smelting & Refining Co. said if quotas are imposed it probably would be forced to close down two domestic lead smelters and one lead refinery and curtail zinc smelting operations. Says Robert P. Koenig, president, Cerro de Pasco Corp.: "The evidence seems overwhelming that to increase import restrictions on lead and zinc would prove an ineffective response to an admittedly temporary situation, and that the end result would be clearly a net loss to the nation."

Domestic producers are divided on how desirable quotas would be. Most would probably favor restric-

tions on metal imports but not on concentrates (which some import for their own needs). Few believe quotas would solve the long term problem.

Muddle—The mineral legislation program seems bogged down.

Importers and American companies that have foreign affiliations want one thing, strictly domestic firms another. Complicating matters is a constantly shifting government policy which has everyone confused.

It may be that Congress will eventually come up with legislation of its own. Pending are a score of bills designed to aid domestic metals, especially lead, zinc, and copper.



STEEL Goes to Europe

Irwin H. Such, left, STEEL's editor-in-chief, interviews Dr. Winkhaus, center, president, and Dr. Pohle, executive vice president, Mannesmann A.G., Dusseldorf

German Steel Dips Slightly

ANOTHER big year is ahead for the German steel industry, but it won't be quite as good as 1957.

In an exclusive interview in Dusseldorf, Dr. Hermann Winkhaus, president, and Dr. Wolfgang Pohle, executive vice president of Mannesmann A.G., big German steelmaker, told STEEL that operations will be affected by a drop in domestic and export business.

The decline, they feel, will be only temporary. German consumers bought heavily to beat a price rise late last year but are expected to be back in the market within two months. German mills are not adversely affected by the auto industry as in the U. S.

Foreign Trade—Steel exports, say Drs. Winkhaus and Pohle, are a vital factor in the economy but a

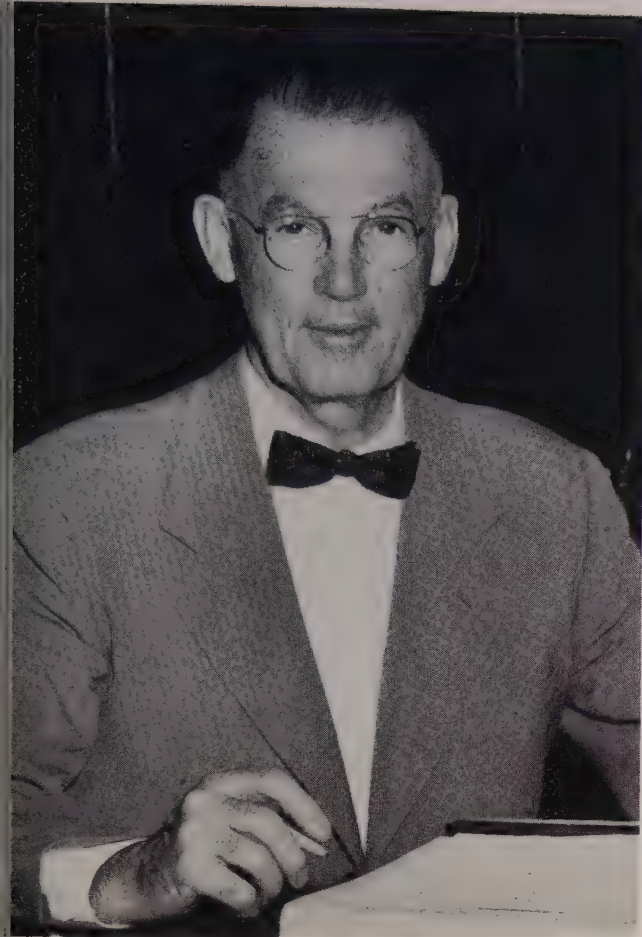
"difficult problem." Mannesmann exported 28 per cent of its products in 1957. Sales of some products may be off as much as 30 per cent this year.

Orders on the books for large diameter welded line pipe will keep the firm's new Mannesmann-Hoesch plant busy for another year, the German steel executives reveal. New orders include 30,000 tons of pipe for Syria and another 25,000 tons for Argentina. Seamless pipe for the oil industry is moving slowly. Drill pipe shipments to the U. S. were stopped six months ago. Demand has also slowed in Canada.

Mannesmann buys most of its steel plates for large diameter welded pipe in the U. S. Currently, 16,000 tons are en route from a west coast mill—the plates were purchased at a price competitive with the German market. Large tonnages also come from a Detroit mill.

This Year and Next — German steel operations may taper off slightly in the next month or two, but production so far this year has set an all-time record. In the first quarter, German mills turned out 6,900,724 tons of ingots, or 258,970 tons more than they did in last year's first quarter.

If operations should hold at that rate, production for the year would be 27,602,896 tons, a gain of 603,896 tons over 1957. The improbability of that is reflected in deep cuts in export prices retroactive to Apr. 1. German domestic prices are not affected.

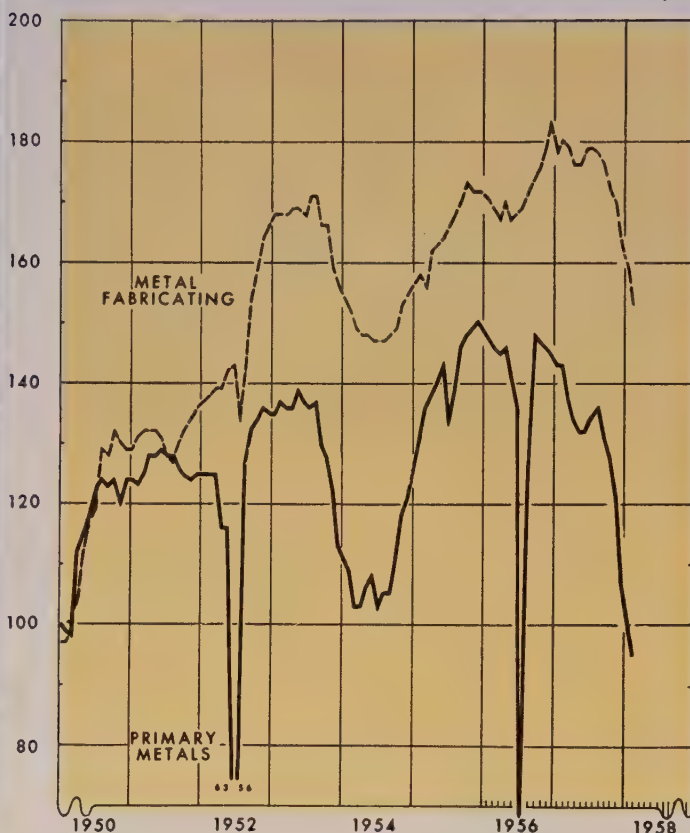


Output of Durable Manufactures

(FRB Indexes, adjusted for seasonal variation, 1947-49 = 100)

Per Cent

Monthly



Frank R. Palmer, president, Carpenter Steel Co., compares activity of metal fabricators (top line on chart) with that of primary metal producers (bottom line)

Inventories: Recovery's Key

RECOVERY from most recessions is triggered by exhaustion of inventories, says Frank R. Palmer, president, Carpenter Steel Co., Reading, Pa. "If inventories are cut too far during a slump, that can lead to panic buying when business swings up," he believes.

Reason — During a recession, fabricators of metals buy less raw material than they use. Differences are made up from inventories accumulated during the past boom. When they are finally brought into equilibrium, raw material must be purchased as fast as it is used, points out Mr. Palmer. Excessive cuts mean trouble.

Activity of primary metal producers is about 36 per cent under the fourth quarter peak of 1956, but their customers, metal fabricators,

are down only about 16 per cent. In the 1954 recession, primary metals fell about 25 per cent below the 1953 high. Activity of fabricators dropped about 14 per cent.

"If primary metal producers were operating at 84 per cent of the last peak figure instead of 64 per cent, the added employment would be a more effective aid to ending the recession than artificial government stimuli," adds Mr. Palmer.

Suggestions—The steel executive suggests metalworking's top management should ask itself these questions and act accordingly:

- What is our sales forecast for the second half?
- Assuming it is correct, what will our normal inventory needs be?
- Are inventories too high or too low for the production outlook?

"In view of the wage increase scheduled in the steel industry, this is certainly not the wise time to be cutting inventories below the needs of second half forecasts," says Mr. Palmer. He concludes:

"Maintaining an intelligent inventory position is good business and could facilitate an economic recovery without increasing the national debt or leading to more inflation."

Finds New Ore Bed

A deposit of iron-manganese ore that may be of commercial interest is reported by the Maine Department of Economic Development. The ore bed lies in southeastern Penobscot County.

Preliminary reports indicate it is at least 8 miles long and about 1/4 mile wide. The department says more work must be done to determine such things as quality and the extent of the discovery.



Convair Div., General Dynamics Corp.

Space Programs Breed New Competition

INTERSERVICE rivalry is becoming a cliché. More businessmen should understand that intercompany rivalry is the better phrase. Since last October, probably 100 different long range space programs have been presented to the Pentagon by U. S. firms. Each service has chosen its favorite contractors. Intercompany, not interservice, rivalry will force the decision on which program the U. S. will follow.

Subcontractors should understand that thoroughly before committing themselves to one service or one company. Smart firms will test their abilities to participate in more than one program. The cancellation of the Navaho missile last year is the classic case history in this field. More stoppages of space, missile, and antimissile programs are likely.

Convair and Avco, for example, have come up with a joint proposal for putting man into space within two or three years. The plan definitely overlaps North American's efforts with the X-15. Both will probably be carried into final development testing; then one will be canceled. Other examples: The Army and Air Force have rival antimissile missile systems. The Air Force is not just trying to sell its system over the Army's; it is knocking the whole idea of antimissile missiles. The Navy sees competition for its Polaris from the Air Force's Minuteman.

Basically, the services are not waging these struggles; the real rivalry is among companies competing for the contracts. The services become their tools.

Crux: Don't be misled by headlines shouting: "Army, vs. Navy." Look behind them for company positions to decide how your firm can profit most.

Knowland Loses His Fight for Labor Laws

Sen. William F. Knowland (R., Calif.), who is standing on a right-to-work platform in his state's gubernatorial race this fall, attempted to attach union control measures to a bill which calls for the regis-

tration, reporting, and disclosure of private employee welfare plans. Majority Leader Lyndon Johnson (D., Tex.), not always prounion, led the fight for the Senate labor forces. The registration measure passed the Senate unanimously, but without a single conservative amendment accepted.

Because labor legislation is a rare thing in an election year, Republicans generally say they are satisfied with results on welfare plan registration. Democrats counter that it was their idea in the first place. Both parties will claim credit this fall.

Potter Leads Fight Against ODCM

President Eisenhower's Reorganization Plan No. 1 of 1958 went to Congress last week: It provides for the uniting of the Office of Defense Mobilization and Federal Civil Defense Administration into a new agency, the Office of Defense & Civilian Mobilization.

Sen. Charles Potter (R., Mich.) has introduced a resolution to stop the merger (scheduled for July 1) until the entire plan is reviewed in Congressional hearings. The senator particularly objects to ODCM's proposed status as an operating agency directly under control of the President. The old ODM is not an operating agency; it delegates its powers to other agencies more subject to control by Congress (such as the Business & Defense Services Administration and the General Services Administration.) The old FCDA was the child of Congress; the new agency would not be, unless Senator Potter's resolution goes through.

The trouble ODM has been in lately (stockpiling policies and fast tax writeoffs) has seriously hurt the agency's usefulness, some legislators feel. Many congressmen believe the new plan is an attempt to wipe the slate clean without losing any Presidential powers to Congress.

Small Business Help Introduced by Mills

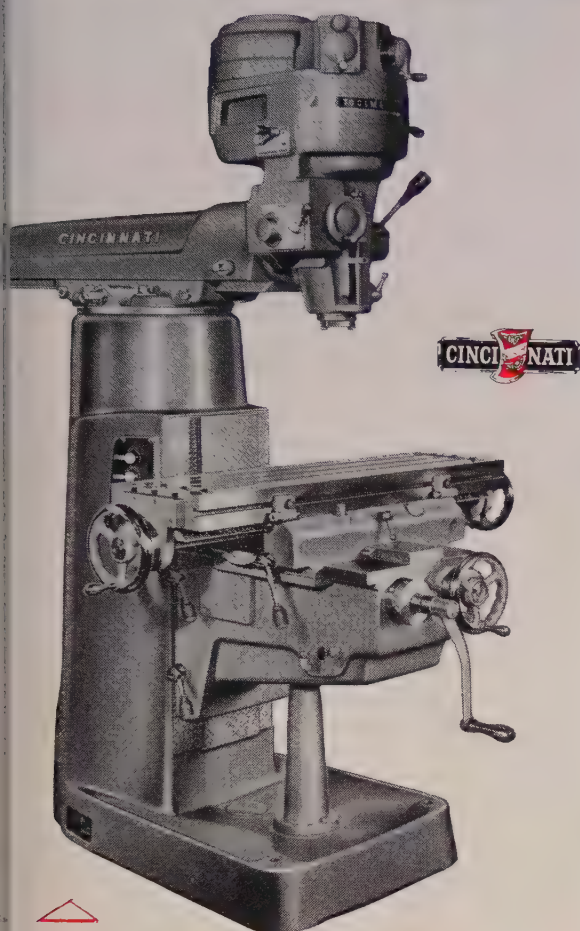
Here's small business legislation that stands a good chance of passage this session because it comes from Rep. Wilbur Mills (D., Ark.), chairman of the Ways & Means Committee, and Rep. Daniel Reed (R., N. Y.), ranking minority member of the committee.

The bill calls for: 1. An ordinary (rather than capital) deduction for income tax purposes on losses from investment in small business stocks up to \$50,000 in one year. 2. Accelerated depreciation on used property up to \$50,000. 3. Partnership-type tax treatment by small business shareholders, if they want it. 4. Payment of estate taxes over ten years.

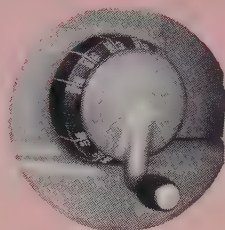
Both Messrs. Mills and Reed will probably recommend the legislation be retroactive to Jan. 1, 1958.

Another small business development: Federal Reserve Board Chairman William McC. Martin told Congress that some small businesses are not getting all the capital they need. He supports S. 3651, which calls for a Small Business Investment Administration to provide federal funds for long term financing. Small Business Administration lending is usually short term.

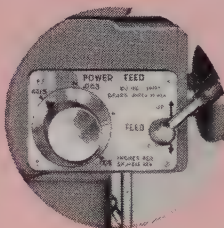
meet **1-D** ..newest member of the **CINCINNATI TOOLMASTER Family**



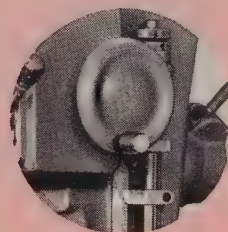
Spindle speeds are changed instantly. Merely select the high or low range and then rotate this control lever to the speed desired. Speeds are dial indicated.



For boring and drilling operations, you'll want power feed to quill, at slight extra cost. Three feed rates; knob selected; up and down; .0015", .003" and .006" per rev.



Quill feed hand-wheel, mounted on front of the spindle head, advances the quill in fine feed progression. A lever on the right-hand side quickly advances or retracts the quill.



New CINCINNATI No. 1D Toolmaster Milling Machine. Catalog No. M-2017. Other styles: 1A, B and 1C; catalog No. M-1870-4.

Hundreds of CINCINNATI Toolmaster Milling Machines — the familiar 1A, 1B and 1C styles — are giving an excellent account of themselves in shops throughout the country. And now the new 1D Toolmaster extends the versatility of this fine family of machine tools still further. Exclusive 1D features and advantages include:

Infinitely variable spindle speeds, 100-3800 rpm

Instant selection of spindle speeds . . . through a control lever on front of the spindle head

1½ hp spindle drive . . . and it's all usable

No. 40 standard taper hole in spindle . . . and positive key drive for arbors and collets

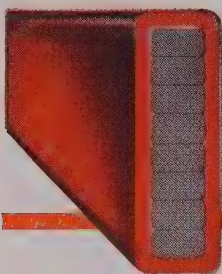
Power quill feed (extra) . . . up and down; three feed rates; power trip-out

These and other features and advantages give 1D Toolmasters the highest performance rating for reducing the cost of vertical and angular milling operations, and, with additional equipment, boring and shaping operations as well. Now's the time to replace your worn out ¾ to 1½ hp milling machines with new CINCINNATI Toolmasters. Complete information in attractive catalogs. May we send copies to you?

THE CINCINNATI MILLING MACHINE CO., CINCINNATI 9, OHIO

CINCINNATI®

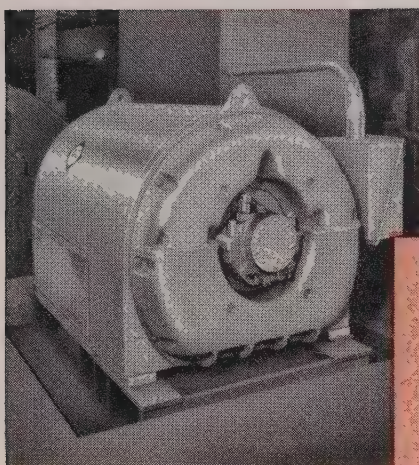
MILLING MACHINES • BROACHING MACHINES • CUTTER AND TOOL GRINDERS • SPECIAL MACHINE TOOLS • METAL FORMING MACHINES • HARDENING MACHINES • CUTTING FLUIDS • GRINDING WHEELS



Super-Seal...

motor with void-free insulation

New motor withstands abrasion, physical stresses, moisture, heat aging...



revolutionizes motor protection practices in metals industry

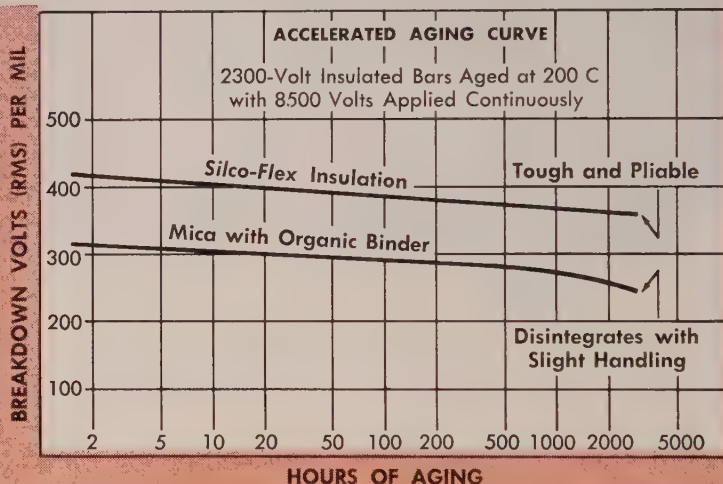
Remarkable new insulating systems combined with advanced mechanical features provide a completely new concept in motor protection — the *Super-Seal* motor. This revolutionary new motor gives you complete protection from conductive dusts, moisture and other contaminants, even with so-called drip-proof motor enclosures.

New motor is protected with:

Silco-Flex stator coil insulating system. A homogeneous, void-free dielectric barrier of vulcanized silicone rubber possessing a resistance to abrasives and most corrosive or chemical atmospheres. So moisture-proof it can be cleaned by hosing down.

Integrated field coils in synchronous machines are completely sealed against contaminants, bonded and locked against mechanical forces.

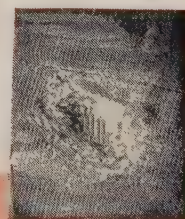
For additional information, call your nearby A-C office or write Allis-Chalmers, Power Equipment Division, Milwaukee 1, Wisconsin.



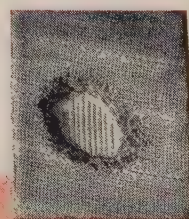
Accelerated aging with a combination of high voltage stress and temperature emphasizes superiority of *Silco-Flex* insulation over mica-organic binder type. Electrical and mechanical properties are little changed by conditions that destroy old-fashioned systems.



Silco-Flex
Insulation



Polyester
Mica Tape



Asphaltum
Mica Tape

Note difference in abrasion! Insulation shown after sandblasting for one minute with 90-grit aluminum oxide and 100-psi air from distance of six inches.

Super-Seal and *Silco-Flex* are Allis-Chalmers trademarks.

ALLIS-CHALMERS



A-5735

Frequency and Effect of Strikes in the U. S.*

Year	No. of Strikes	Workers Involved	Mandays Idle
1946	4985	4,600,000	116,000,000
1947	3693	2,170,000	34,600,000
1948	3419	1,960,000	34,100,000
1949	3606	3,030,000	50,500,000
1950	4843	2,410,000	38,800,000
1951	4737	2,220,000	22,900,000
1952	5117	3,540,000	59,100,000
1953	5091	2,400,000	28,300,000
1954	3468	1,530,000	22,600,000
1955	4320	2,650,000	28,200,000
1956	3825	1,900,000	33,100,000
1957	3673	1,390,000	16,500,000

*Included are work stoppages resulting from labor-management disputes and involving six or more workers for at least one full day or work shift.

965 Strikes in '57

Metalworking industries hardest hit. They report 1148 strikes idled 526,250 workers for about 5.9 million mandays. Wages and hours most common cause

THE FIVE major metalworking industries suffered 953 strikes in 1957 (nearly half the 1965 work stoppages reported last year by U. S. manufacturing firms). Department of Labor statistics show that strikes against those groups (primary metal, fabricated metal products, electrical machinery and equipment, other machinery, and transportation equipment) idled 478,000 workers for 5,198,000 mandays.

When four other metalworking groups (ordnance and accessories, furniture and fixtures, instruments and related products, and miscellaneous manufacturing industries) are added, the totals are pushed to 1148 strikes idling 526,250 workers for 5,897,000 mandays.

The 1965 strikes reported by man-

ufacturing firms as a group involved 778,000 workers for 9,390,000 mandays. Nonmanufacturing industries were hit by 1711 work stoppages. Some 610,000 workers were idled for 7,080,000 mandays.

Why — Disputes over wages, hours, and supplementary benefits were the most common reasons for strikes last year. Government figures show such grievances caused 1730 strikes. About 752,000 workers were involved and work was stopped for 11.6 million mandays.

Other working conditions—such as job security, shop conditions, or workloads—caused disputes resulting in 837 work stoppages. Union organization coupled with questions of wages or hours caused another 309 strikes. Disputes arising from

problems of union organization alone precipitated 442 stoppages. Jurisdictional problems resulted in 326 disputes.

When and Where—The frequency of new strikes peaked in the late spring and early summer in 1957 and dropped off sharply in November and December. May was the high month with a total of 446 new strikes (May was also high in '56 with 478 new stoppages reported).

As might be expected, New York (460), Pennsylvania (440), and Ohio (355) were hardest hit. Other states reporting more than 100 strikes: New Jersey (238), California (235), Michigan (208), Illinois (199), Massachusetts (144), West Virginia (139), and Missouri (111).

New York-Northeastern New Jersey (467), Philadelphia (130), and Detroit (120) were the only metropolitan areas to be hit by more than 100 stoppages in 1957.

Kaiser Steel: Detective

Having trouble preventing the theft of small tools and materials from plants?

A technique used by Kaiser Steel Corp. at its Fontana, Calif., steel plant may solve your problem.

The gate guard has a dispensing tube that holds 100 discs resembling poker chips. Ninety of them are white, ten are red. When an automobile arrives at the exit gate, the guard flips the dispenser button. If a white chip drops out, the auto is waved on. If a red chip comes out, the car is searched.

Chances are only 1 in 10 that a departing car will be searched. But no one, not even the guard, knows when.

Result: The system eliminates the need to search every car, yet the selection of cars to be searched discriminates against no one.

Polaris Launcher Tested

Launching equipment for the Navy's Polaris has completed numerous firings of dummy missiles, reports Westinghouse Electric Corp., Pittsburgh. The corporation holds a \$10-million prime contract for development work on the Polaris.

The missile will be launched above or below water. It's the nation's first ballistic missile assigned to specially equipped naval ships.

Metalworking's Fringes Are High

(For average metalworking wage earner)

Hourly base rate	\$2.24
Hours	40
WEEKLY BASE EARNINGS	\$89.60
Social Security	1.61
Unemployment Compensation	1.08
Workmen's Compensation	0.98
Pensions	2.42
Life, medical, accident insurance	2.15
Profit sharing, bonus, etc.	1.34
Supplemental Unemployment Benefits	2.00
Vacations, paid holidays	5.28
Rest periods, wash-up time, coffee breaks	2.33
TOTAL WEEKLY EMPLOYMENT COST	\$108.79

Source: Compilations based upon Commerce Department figures and U. S. Chamber of Commerce survey.



Check Your Fringe Costs

With today's pressure on prices and profits, this is another area in which alert management can hold the reins on costs. Here are some guideposts

YOU'LL PAY \$1.56 per manhour for fringe benefits by 1975, predicts one management consultant. In metalworking, they come to nearly 48 cents per manhour now. Many plants pay more: International Harvester puts its cost at 65 cents.

Originally only "something extra" to help employees meet emergencies, fringe benefits have snowballed into a multibillion dollar industrial way of life.

Definition—Items included in the figures above: Social Security, Unemployment Compensation, Workmen's Compensation, pension and welfare benefits, profit sharing and bonus plans, SUB, and pay for time not worked (vacations, holidays, rest periods, coffee breaks, and wash-up).

The Spiral—Several forces are driving costs upward:

1. Union pressure for more benefits. SUB is a major addition of recent origin. Now Walter Reuther and his United Auto Workers want profit sharing.

2. Union pressure for the expansion of present benefits, such as the UAW demand to enlarge SUB coverage from 25 to 52 weeks.

3. Inflation is also taking its toll. Medical and health costs have climbed 0.5 per cent per month for the last ten years.

Some Help—Want to minimize your fringe costs? You can start here, suggests Edwin Shields Hewitt & Associates, consulting firm:

1. Make sure you have a clearly defined policy of what you're trying to do. Spell it out in terms of these benefits: Old age, death, sickness and disability, medical care, unemployment.

Without specific policy, you run the risk of a high-cost hodgepodge program which can make for poor employee relations.

2. Make sure you're organized for effective administration. Proper co-ordination of the financial function and employee contact activities is needed to keep administrative costs down and avoid duplication.

3. Investigate the different ways of financing each program, particularly retirement, pension, and medical care.

Medical — Medical care is the most expensive single benefit. Of the \$4.9 million in total benefits paid by Inland Steel Co. in fiscal 1957, \$1.7 million was for hospital and surgical claims of dependents of employees alone. Such statistics point up why major medical programs are getting more attention.

But They'll Go Higher

Retirement—

- Increasing benefits
- Vesting privileges
- Variable pension amounts
- Split funding of reserves, using insurance and trust funds

Employment—unions are seeking through SUB—

- Wider eligibility for benefits
- Higher takehome pay level
- Extension of benefit period

Illness—

- Major medical coverage
- Extension of protection to retired employees

Death—

- Increasing benefits
- Extension of benefits after retirement
- Level funding through pension trusts

Higher costs are accounted for by:

1. Inflation. 2. Emphasis on Blue Cross type plans has brought about overuse. 3. Improved medical practice has resulted in expanded usage of benefits. 4. Because the individual shares in the expense of a major medical plan, he has a definite interest in controlling its cost.

Standard Coverage—General Electric Co.'s program highlights the basic features of major medical plans.

Employees pay part of cost. Benefits have a \$7500 maximum a year and \$15,000 during a lifetime. In some instances, benefits can be renewed.

Hospital, surgical, and diagnostic ray expenses have a \$25 deductible feature. The plan pays the next \$225 and 85 per cent of all costs above that.

Physicians, nurses, drugs, medicines obtained outside the hospital, laboratory charges, and equipment rentals have a \$50 deductible feature. Seventy-five per cent of the balance is paid under the plan.

Most officials emphasize that you probably won't cut benefit costs by switching to a major medical from

a Blue Cross type plan. You should, however, be able to provide more benefits for the same cost. In some states, Blue Cross offers an optional deductible plan similar to that of major medical policies.

Retirement—In financing pension and retirement programs, you'll hear more arguments in favor of trust funds, versus insurance, for two reasons:

1. The desire to inflationproof pensions for the employee.
2. The possibility of lower financing costs to the company because of the long term appreciation of stocks.

Here, again, the experts advise: Move cautiously; your own situation and objectives will dictate what's best. Insurance gives you a more complete package and guarantees the benefits. Trust funds allow greater diversification in the investment of your money.

A recent development drawing the attention of smaller firms is the pooled investment fund. Continental Illinois National Bank & Trust Co., Chicago, has a \$20-million pooled fund which is typical.

There's no limit on the amount you can invest in the fund, and in-

come is immediately reinvested. The Continental Illinois plan combines investments in equities and fixed income property—participants can specify the proportion.

Typical programs provide a pension benefit equal to 1 per cent of compensation at retirement multiplied by years of service, says Robert Farwell, assistant secretary at Continental Illinois. Programs cost 3 to 8 per cent of the payroll, depending upon the retirement age and age spread of employees.

Two other points: 1. Advancing the retirement age by two years to 67 can save 15 per cent in pension costs, says Geoffrey Calvert, vice president of Alexander & Alexander Inc. 2. Each extra 0.5 per cent of earned income in a trust can cut total pension costs by 12 per cent.

Ready-Made Plan—Hewitt & Associates developed a packaged program for an Ohio firm. Its basic features:

1. Each year the company sets aside 15 per cent of its profits before taxes to finance it.

2. Benefits are provided for death, disability, medical care, retirement.

3. What's left after benefits are paid out each year goes into a profit sharing trust. Money is allocated on the bases of salary and service.

4. Money in each account—if greater than specified benefits—goes to the individual when he retires or is disabled—or to his estate when he dies.

Advantages of the plan cited by Mr. Hewitt:

1. Costs are controllable.
2. Costs are correlated to company earnings.
3. Employees have mutual interest in the plan as a profit sharing device.
4. It's designed for efficient administration.

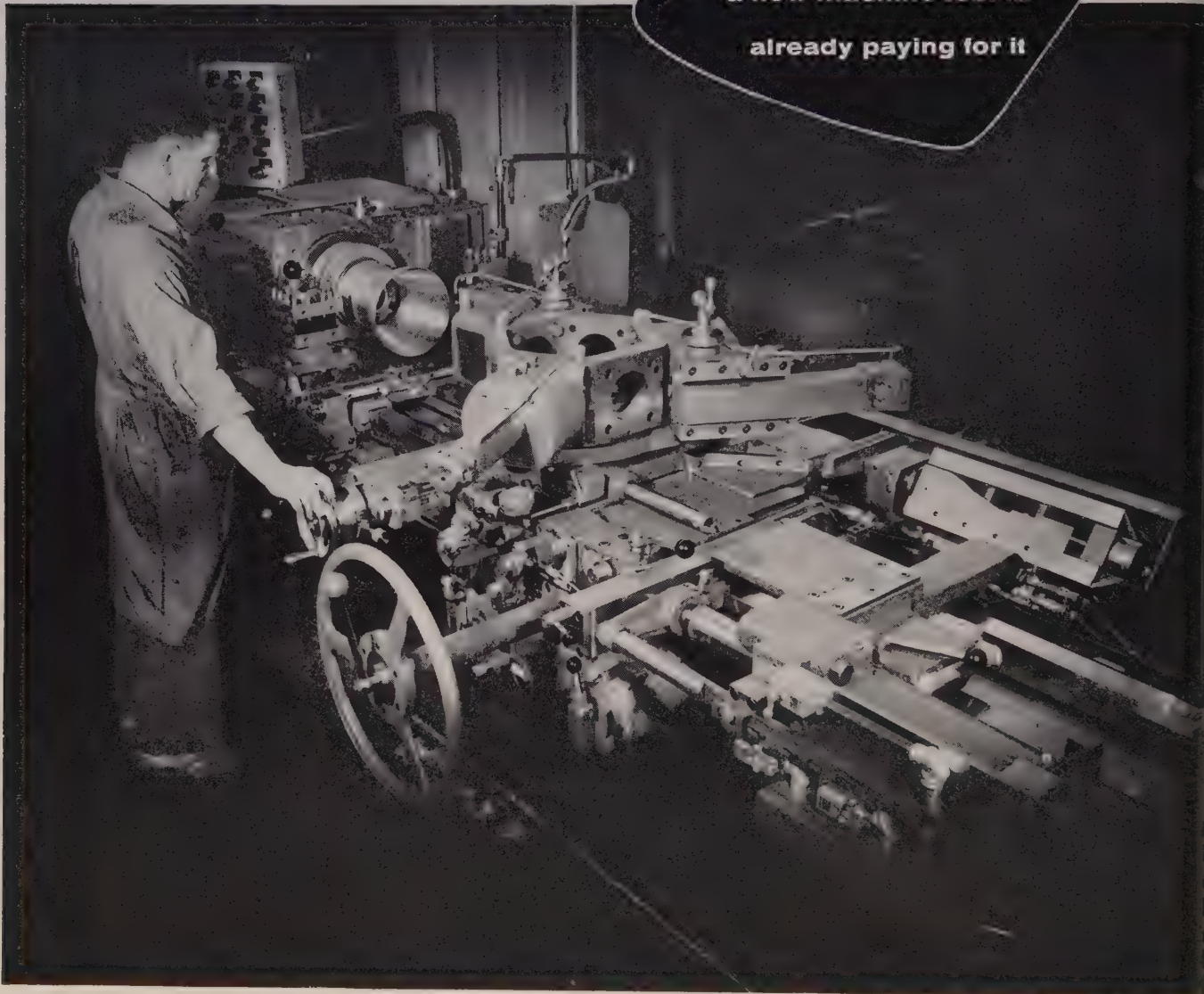
Summary—Many executives feel that lack of communication is the shortcoming in most programs—the employee doesn't really know how much he is earning in terms of fringe benefits.

Takehome pay is the only wage he's aware of. Perhaps a listing of benefits on his pay check would emphasize his total pay.

An extra copy of this article is available until supply is exhausted. Write Editorial Service, STEEL, Penton Bldg., Cleveland 13, Ohio.

JONES & LAMSON MACHINE TOOLS

the man who needs
a new machine tool is
already paying for it



Out-of-this-World Accuracy

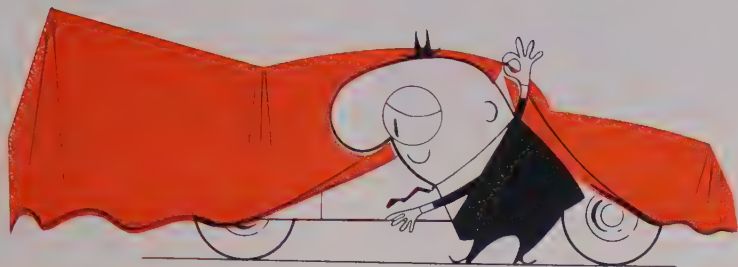
Whether they're destined to go "out of this world" or not, many jobs demand some "out of this world" machining. Here's one, on a J & L lathe which is adapted for two-way tracing from the hexagon turret. Critical dimensions on both internal and external tapers, plus several intricate contours are finish-machined in one chucking.

A three-way indexing template holder is push-button controlled. Thus, down-time for template changes is eliminated, and the 180°

tracer continues to machine on both the forward and return feed of the saddle carriage.

A single selector switch disengages the tracing unit and the machine is ready for normal* turret lathe operations.

*("Normal" for J & L turret lathes means unsurpassed accuracy, high production, and low, low maintenance.) For details, write for our descriptive folder No. 5425. Jones & Lamson Machine Company, 517 Clinton St., Springfield, Vermont.



NEW MODELS WILL COME EARLY... IF

Tooling is on time.

Sales trends demand it.

It will help 1960 plans.

Consensus: Early '59s

INDUSTRY hopes autodom can offer most of its 1959 models between mid-September and early October. Early introductions, bringing badly needed business to suppliers, could hasten the economic upsurge expected to accompany new car premieres.

Tooling—Final deadline for delivery of tools and dies is June 31—almost a month earlier than usual. Die programs must be completed by June 15. Although a fair amount of tooling has already been placed for 1959 cars, ready availability of labor and materials means there will be no laggards.

Chrysler Corp. and some General Motors divisions have been making more extensive changes than they'd planned on earlier. Part of the tooling has been extended to July 15. That's the absolute limit, according to Detroit toolmakers. In fact, many shops are already looking with concern to the seasonal

slump that will hit them by mid-July instead of mid-August.

Sales Demand—The poor sales showing of 1958 cars is also a supporting factor for early introductions.

More important, automakers feel new cars will provide more work, encouraging customers to start buying and hasten recovery.

Unfortunately, the problem isn't that simple. Before motordom can throw its 1959 offerings on the market, it has to be sure enough of the '58s have been consumed to make the venture worthwhile.

New car inventories are shrinking as dealers strengthen the sales efforts and producers continue to slash output. But they're still above the 800,000 mark. Industry talk has it that company chiefs would like stocks around half a million or less when '59s go on sale.

Look Ahead—Finally, pressure for early introduction comes from

men responsible for 1960 models which already are far advanced in planning and design. The sooner 1959 jobs get to dealers, the quicker automen can get a tipoff on last minute changes they should make on the next year's offerings. GM is especially interested this year because it wants to make last minute checks on unit body costs.

GM Wary—Although the company can't officially confirm it, GM is moving toward a single body shell for its 1959 cars. (It now has three basic bodies for its five car lines.)

Its aim: Put the money saved into new quarter panels, fenders, and grilles every year. Detroit still believes annual styling change is a major factor in sales success, and the bigger the change the better—if it can be paid off in a year.

With this theory in operation, GM believes a unitized body will allow cheaper changeovers.

If it should want to begin unitized construction in 1960, the commitment should be made by January at the latest. It means the sooner '59s come out, the quicker GM designers and cost men can check the feasibility of the change.

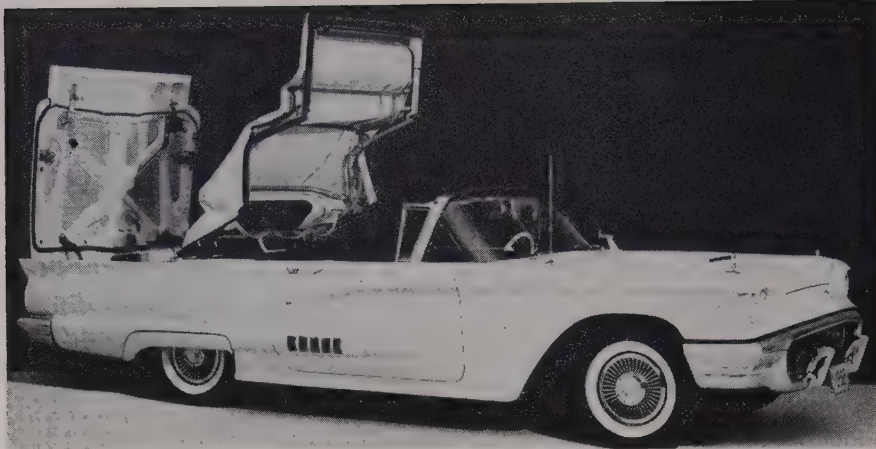
Chrysler Pushing—Although such hasty action is foreign to GM's nature, competition may force it. Chrysler is committed to a semi-unit body in 1960 (unless it has completely fooled Detroit), and Ford is reaping experience with Lincoln and Thunderbird which are unit built.

Chrysler is already using a single body shell with alterations for Imperials and also wants annual styling changes. E. C. Quinn, Chrysler's new vice president and general sales manager, automotive products, asserts that the growth of the industry depends on the ability of engineers to produce dramatic advancements in cars each year.

Outlook—These are factors motordom is pondering as it waits to set introductory dates.

It means unveilings will depend mainly on how quickly present inventories go down. If companies don't hit standard volume, they're apt to spring 1959 cars

(Material in this department is protected by copyright, and its use in any form without permission is prohibited.)



FORD'S THUNDERBIRD finally gets a soft top. The four passenger, unit body car is designed so the top folds into the luggage compartment much like Ford's convertible hardtop roof. This design eliminates a "boot" and takes up no rear seatroom. Ford's still making its hardtop T-Bird; it's processing a 10,000 order backlog.

early no matter how many '58s remain unsold.

Chrysler Details Shake-Up

Three corporate groups have been established by Chrysler to take over responsibilities formerly handled by each division: Sales and advertising, manufacturing and assembly, and product planning. The move is expected to strengthen the management structure by placing more control in the corporate office.

L. L. Colbert, company president, says: "A basic purpose is to unify responsibilities in the sales and marketing areas; to obtain greater market orientation and to enable the divisions, without production and assembly responsibilities, to concentrate on product planning from a customer point of view, service, dealer relations, sales promotion, and advertising."

In other words, the corporation will plan and build the cars and establish market strategy. The divisions will sell them. This is a reversal of the decentralization trend autodom has followed so long.

Rundown — Heads of the new groups and their titles: Byron J. Nichols, group vice president, automotive sales; R. S. Bright, group vice president, automotive manufacturing; Robert P. Laughna, corporate vice president in charge of the corporate planning staff. Messrs. Nichols and Laughna are new vice presidents.

Each Chrysler division is now

headed by a general manager-vice president. They are: Harry E. Chesebrough, Plymouth; M. C. Patterson, Dodge; J. B. Wagstaff, De Soto; C. E. Briggs, Chrysler and Imperial. They report to Mr. Nichols.

John Mansfield, former Plymouth chief, joins the staff of E. C. Row, newly elected first vice president and chairman of the administrative committee. Irving Woolson, De Soto's former president, is vice president and director of manufacturing services under Mr. Bright. E. C. Quinn, previously Chrysler division

head, is vice president and general sales manager under Mr. Nichols. Mr. Patterson keeps his job, but his title is changed.

Poor Profit—The Chrysler regrouping has been under study for some time, but insiders say the firm's poor first quarter showing hastened its coming.

Mr. Colbert says the company lost \$15.1 million in the first quarter, compared with net earnings of \$46.5 million in the same period of 1957.

Sales were \$537.2 million, or 53 per cent below those of \$1.1 billion in the first quarter of '57. Chrysler has shipped 185,888 cars and trucks, vs. 420,880 units in the same year-ago period.

Not Sudden—Actually, the move started several months ago when Chrysler began shifting manufacturing activities. The news was that De Soto and Chrysler assemblies would be combined in 1959. Now the company says Imperials will be built in a separate plant.

Motordom suspects the shifts are just beginning. De Soto seems destined to become a nameplate, the De Soto division a sales staff. There's also talk of setting up a division similar to GM's Fisher Body.

AMC Reports Earnings

American Motors Corp. reports it made \$7.3 million profit in the first half of its fiscal year (through Mar. 31). It lost \$5.3 million in the first half of its 1957 fiscal year.

George Romney, president, says net sales for the period totaled \$227.3 million, more than 20 per cent above year-ago levels. He expects AMC to make a profit in the June quarter, too, but adds that vacations, inventory taking, and model changeovers may not make profits possible in the final quarter ending Sept. 30.

The company is building at a rate of 15,000 cars monthly and has added 280 dealers since Jan. 1. Mid-April sales reports show since 1958 models came out, 71,264 Ramblers have been sold, vs. 41,936 in the comparable 1957 period.

In the smaller car field, Mr. Romney adds Rambler American sales have exceeded expectations. AMC's imported Metropolitan shows a 15.4 per cent sales increase (5727 against 4961) so far in this fiscal year.

U. S. Auto Output

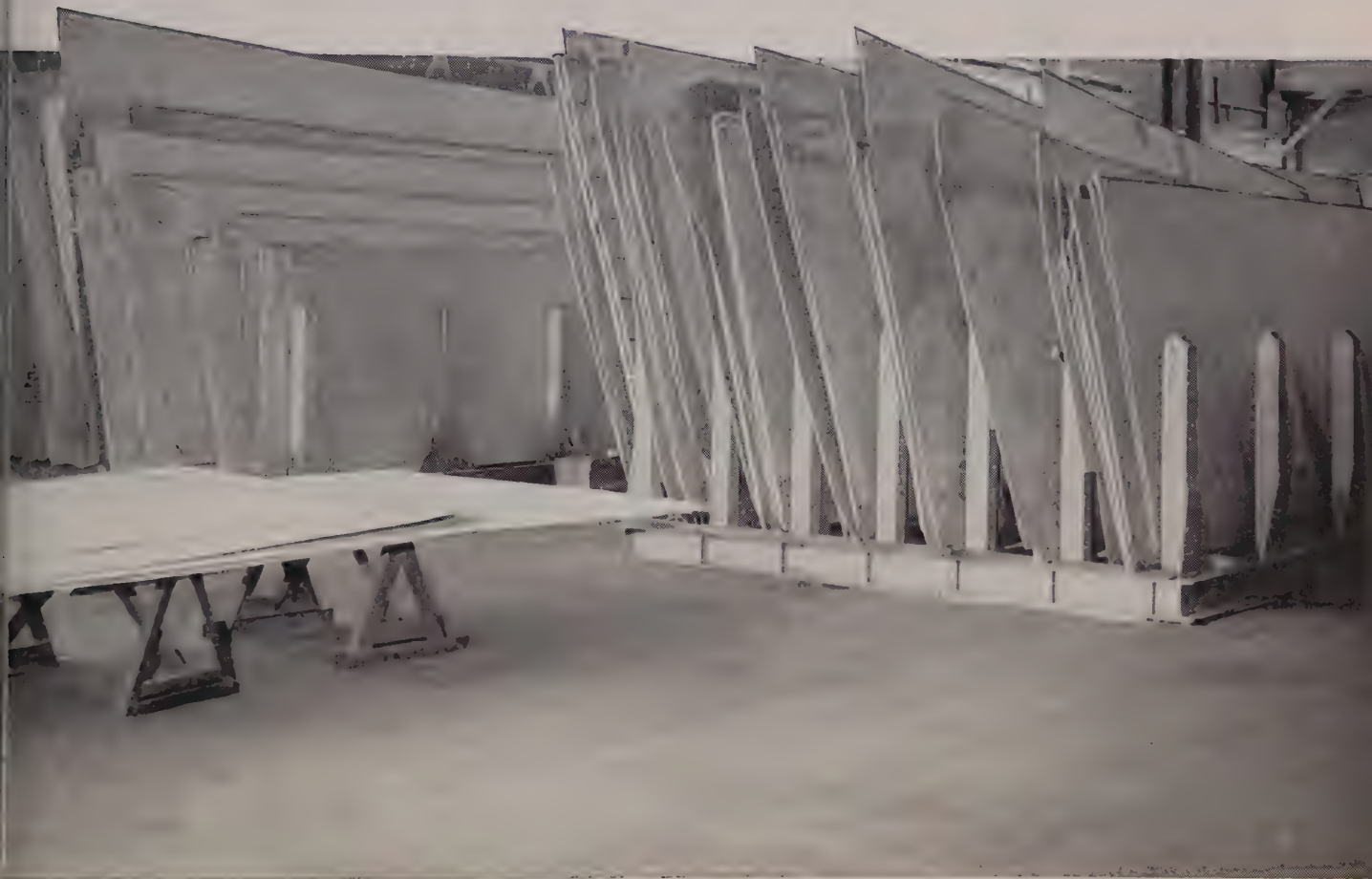
	Passenger Only	
	1958	1957
January	489,357	641,591
February	392,112	571,098
March	357,049	578,826
3 Mo. Total	1,238,518	1,791,515
April		549,239
May		531,365
June		500,271
July		495,629
August		524,354
September		284,265
October		327,362
November		578,601
December		534,714
Total		6,117,315
Week Ended	1958	1957
Mar. 29	93,844	130,233
Apr. 5	64,318	130,318
Apr. 12	84,997	126,194
Apr. 19	73,219	118,327
Apr. 26	59,130†	123,633
May 3	68,000*	119,999

Source: Ward's Automotive Reports.
†Preliminary. *Estimated by STEEL.



Available now from Carlson

*... any size and shape you want
in Types 405, 410 and 430 stainless plate*



Carlson's stock of Types 405, 410 and 430 chromium stainless plate is the largest ever. You can order plates, large or small, and get delivery in a few days. Types 405 and 410 find wide application in petroleum processing. Type 430 is generally used for furnace parts, annealing boxes and nitric acid storage tanks. Consider the 400 series if you need stainless plates right now.

Prompt delivery isn't your only advantage. These grades

cost less than chromium-nickel stainless steels and if you need irregular shapes and sizes, experienced men with specially designed equipment can cut your plates and get them out in a hurry. Carlson provides a complete service with a flexible operation to take care of your specific requirements. This combination of stock, specialization and service saves you time and money, *gives you what you want when you want it!*

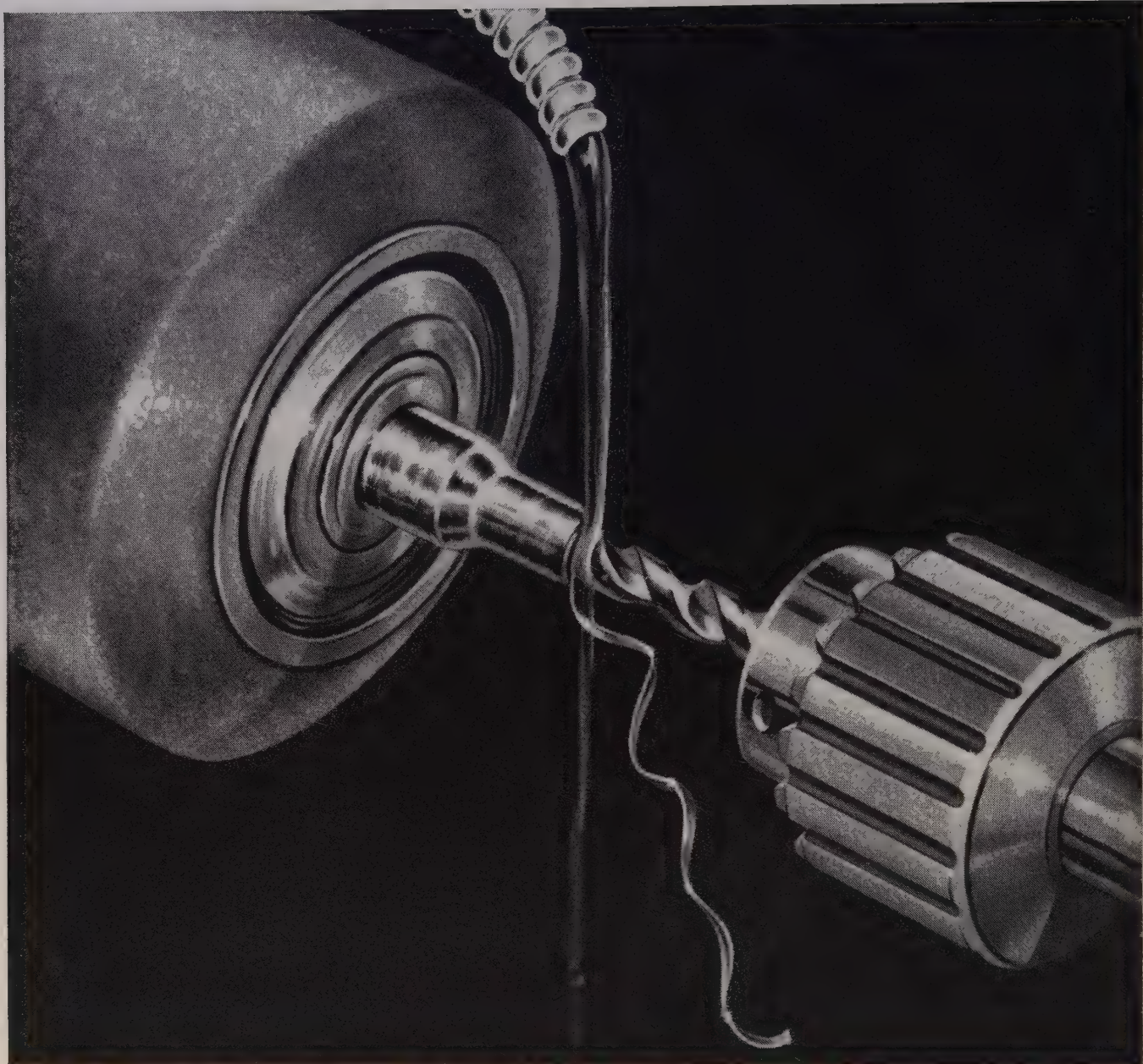
G.O. CARLSON *Inc.*
Stainless Steels Exclusively

THORNDALE • PENNSYLVANIA

District Sales Offices in Principal Cities

PLATES • PLATE PRODUCTS • FORGINGS • BARS • SHEETS (No. 1 Finish)





excellent visibility offers close working control

The transparency of Dortan cutting oils permits the machine operator to flood work and tool areas with a broad stream *without impairing visibility*. Clean working conditions permit easier gauging and measuring . . . assure finer finishes, increased output, fewer rejects.

Sulfur and other additives impart excellent machining properties to Dortan cutting oils. Smoking is minimized . . . low pour points make handling easy. Separation and settling are never problems. *Four* grades offer varying cutting strengths:

Dortan 41: General-purpose cutting oil — for most operations with fairly easily machined ferrous alloys.

Dortan 43: Moderate- to heavy-duty cutting oil for medium- to low-machinability steel or titanium.

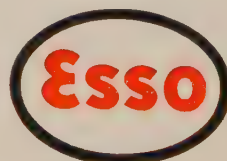
Dortan 45: Highly compounded cutting oil with sulfur — will not stain copper or copper bearing alloys.

Dortan 50: Extremely heavy-duty active-sulfur-type oil — for steels of difficult machinability (as stainless and heat-resistant) and for internal broaching. Also excellent as form and thread grinding oil for soft, tough or stringy alloys.

Get complete technical data from the nearest Esso Standard Oil Company Division Office: Boston; Pelham, N.Y.; Elizabeth, N. J.; Bala-Cynwyd, Pa.; Baltimore; Richmond; Charlotte; Columbia, S. C.; Memphis; New Orleans.

DORTAN®

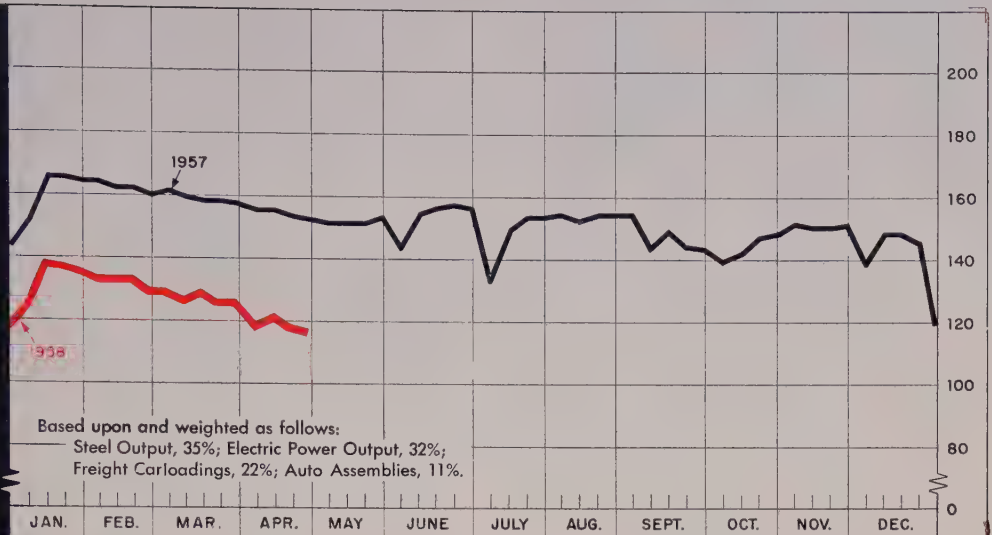
ESSO RESEARCH works wonders with oil



STEEL**INDUSTRIAL PRODUCTION INDEX**

(1947-1949=100)

LATEST WEEK — **117***
 PREVIOUS WEEK — **119**
 MONTH AGO — **127**
 YEAR AGO — **153**



Week ended Apr. 26.

Appliance Men Back 'Buy It Now' Campaign

APPLIANCE manufacturers think they see the beginnings of an up-trend in orders, and many are backing the "buy it now" movement in an effort to keep it going.

Industry Action—The American Home Laundry Manufacturers' Association at its convention last month launched an industrywide campaign on the theme that a purchase now is an investment in the future for everyone. (The association claims that the purchase of an automatic washer supports a worker for ten days.) Judson S. Sayre, president of the Norge Div. of Borg-Warner Corp., Chicago, proposed a national move by all durable goods industries and trades to create a positive consumer attitude.

Ralph J. Cordiner, chairman of General Electric Co., Schenectady, N. Y., has announced that GE will promote an "operation upturn" program. One aim is to create and offer attractive credit arrangements for customers. Other aims are to speed up delivery schedules, improve quality, and reduce causes for customer complaints.

Speed Up — In explaining the move, Mr. Cordiner says: "The recent slight upturn in orders can be turned into a definite trend and then snowball into a steady recovery if business and industry will join in a fresh, concerted effort to go after the orders."

The "slight upturn" he mentions can be seen in stepped-up production schedules throughout most of the appliance industry. Whirlpool Corp. for instance, has been recalling workers since the first of the year. At its St. Paul plant, 400 have been called back since Jan. 1, and between 100 and 260 will be

added to start production on the 1958 line of refrigerators. When production reaches its peak, more than two-thirds of all those laid off last year will have been recalled.

Here is a quick rundown on conditions in segments of the industry as reflected by the latest association statistics:

BAROMETERS OF BUSINESS**INDUSTRY**

	LATEST PERIOD*	PRIOR WEEK	YEAR AGO
Steel Ingot Production (1000 net tons) ²	1,293 ¹	1,270	2,226
Electric Power Distributed (million kw-hr)	11,000 ¹	11,107	11,310
Bituminous Coal Output (1000 tons)	7,050 ¹	6,960	10,182
Crude Oil Production (daily avg—1000 bbl)	6,250 ¹	6,251	9,537
Construction Volume (ENR—millions)	\$325.7	\$304.5	\$439.6
Auto, Truck Output, U. S., Canada (Ward's)	84,631 ¹	98,884	159,991

TRADE

	LATEST PERIOD*	PRIOR WEEK	YEAR AGO
Freight Carloadings (1000 cars)	525 ¹	534	691
Business Failures (Dun & Bradstreet)	346	342	302
Currency in Circulation (millions) ³	\$30,617	\$30,733	\$30,610
Dept. Store Sales (changes from year ago) ³	-9%	-16%	+13%

FINANCE

	LATEST PERIOD*	PRIOR WEEK	YEAR AGO
Bank Clearings (Dun & Bradstreet, millions)	\$25,437	\$24,260	\$20,961
Federal Gross Debt (billions)	\$275.3	\$272.2	\$274.4
Bond Volume, NYSE (millions)	\$30.7	\$30.4	\$23.4
Stocks Sales, NYSE (thousands of shares)	13,609	12,225	13,413
Loans and Investments (billions) ⁴	\$92.7	\$89.8	\$87.3
U. S. Govt. Obligations Held (billions) ⁴	\$30.2	\$28.1	\$26.3

PRICES

	LATEST PERIOD*	PRIOR WEEK	YEAR AGO
STEEL's Finished Steel Price Index ⁵	239.15	239.15	227.41
STEEL's Nonferrous Metal Price Index ⁶	195.5	196.2	239.7
All Commodities ⁷	119.4	119.5	117.3
Commodities Other than Farm & Foods ⁷	125.7	125.7	125.4

*Dates on request. ¹Preliminary. ²Weekly capacities, net tons: 1958, 2,699,173; 1957, 2,559,490. ³Federal Reserve Board. ⁴Member banks, Federal Reserve System. ⁵1935-39=100. ⁶1936-39=100. ⁷Bureau of Labor Statistics Index, 1947-49=100.

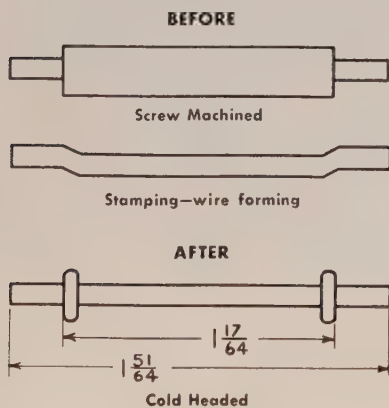
COST REDUCTION PROGRAM CALLS FOR COLD HEADING

Hassall Re-Design Often Means Big Savings on Parts

The most important consideration we can point out to the designer or purchaser of fasteners and small parts is that any part which can be machined from rod stock is also potentially available from the cold heading manufacturer. This technique offers speed of production, without scrap loss, plus superior strength and appearance for low cost and high design efficiency.

Perhaps our greatest contribution to your operation is our re-design service. An expert cold heading designer can very often study your drawings and come up with a modified part which will be lower in cost, stronger structurally, and easier for you to assemble.

This spacer is typical of such a Hassall re-design. Note the customer's drawing... this is a stamping, not too accurate, with poor bearing surfaces and not too easy to handle in assembly.



Now, look at this spacer as re-designed for cold heading. Now, a double collar spacer which is very accurate, structurally much stronger, and with much better bearing surfaces. And lower in cost!

Given complete specifications, including a drawing and an idea of the application, we can quickly tell you whether or not it will be advantageous to have your part or fastener JOB-DESIGNED by HASSALL.

Write today for your copy of our new Catalog No. 106.

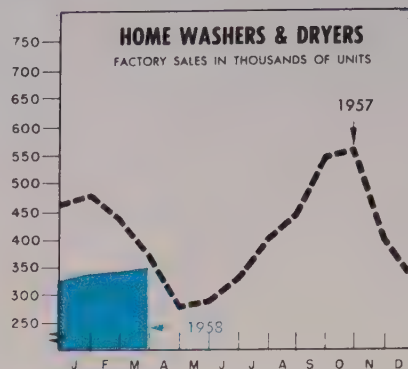
John Hassall, Inc.

P. O. Box 2269

Westbury, Long Island, N. Y.

Manufacturers Since 1850

THE BUSINESS TREND

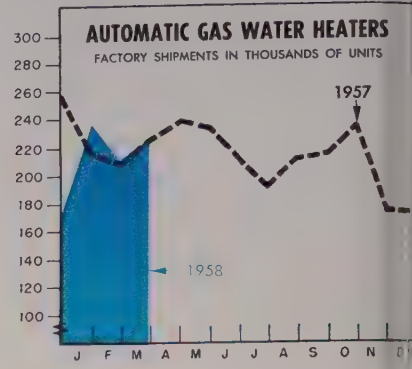


	Washers		Dryers	
	1958	1957	1958	1957
Jan.	238,153	331,314	98,630	144,621
Feb.	263,099	319,580	78,578	114,517
Mar.	278,891	286,205	70,309	83,668
Apr.	230,675	42,850	31,572	46,783
May	254,195	31,572	70,011	116,601
June	282,289	46,783	164,468	185,772
July	335,139	70,011	141,663	118,116
Aug.	329,046	116,601		
Sept.	384,299	164,468		
Oct.	369,487	185,772		
Nov.	260,460	141,663		
Dec.	206,787	118,116		

Totals 3,589,476 1,260,642

American Home Laundry Mfrs. Assn.

Charts copyright, 1958, STEEL.



	Shipments—Units		
	1958	1957	1956
Jan.	237,100	214,900	239,000
Feb.	211,500*	208,200	259,202
Mar.	228,100*	226,600	267,502
Apr.	238,200	241,202	244,302
May	233,400	244,302	251,502
June	211,700	251,502	231,902
July	192,500	231,902	243,502
Aug.	210,300	243,502	218,102
Sept.	215,500	218,102	224,702
Oct.	234,700	224,702	184,402
Nov.	173,300	184,402	156,802
Dec.	172,700	156,802	

*Preliminary.
Gas Appliance Mfrs. Assn.

Home Laundry Equipment—Factory sales of all home laundry appliances during March amounted to 363,255 units, up 2 per cent from the February total. On the up side: All washers and automatic ironers (see table above). On the down side: Washer-dryers and electric and gas dryers (table above).

Heating Equipment—On the up side in March were industry shipments of gas-fired furnaces and gas-fired boilers. Gas conversion burners and oil-fired installations were on the down side in February.

Ranges — Factory shipments of gas ranges in January were up over 8 per cent. February shipments of electric ranges showed little change from those of January.

Water Heaters—Shipments of gas water heaters in March were 228,100 units, ahead of both the preceding month and the year-ago period. (See chart, above.) For the first quarter, this segment of the industry was 4.2 per cent above the year-ago level. Electric unit shipments for the first two months averaged 60,000, about on a par with the 1957 period.

Refrigerators—In February, factory sales were 21,700 units above the January pace.

Vacuum Cleaners — Sales in March totaled 291,418 units, 29 per cent above the February figure.

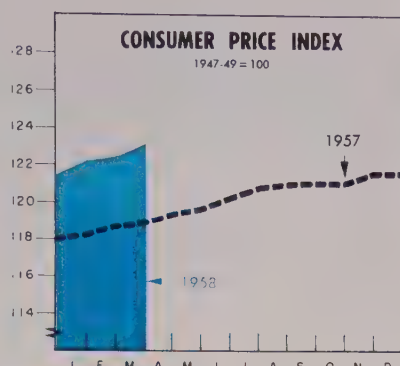
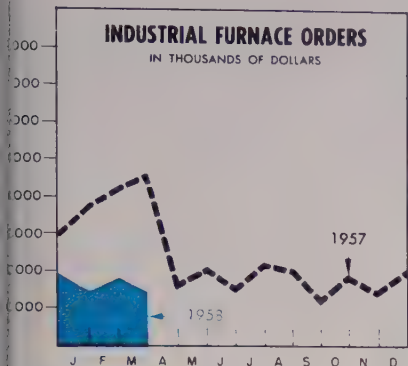
In most cases, the 1958 figures are still behind the year-ago totals. But Mr. Cordiner says that his company's orders in April indicate that the low point has been passed.

PAs See More Orders

The April survey of the National Association of Purchasing Agents also brings some good news. New orders continued to improve, respondents say, although production has not yet responded. They also confirm STEEL's quarterly survey showing that inventories are still being reduced (see Page 125). During the past month, prices began to move downward in a fashion more normal to recession periods. The employment report leaves much to be desired, although there was some slight improvement from the March position.

Construction Still a Plus

Reports on volume of construction contracts in March are mixed, but they tend to uphold the view that this is still one of the plus factors in the economy. F. W. Dodge



	1953	1955	1957
Jan.	3,045	7,380	10,244
Feb.	3,684	8,373	12,163
Mar.	2,871	9,090	7,025
Apr.	3,164	8,803	3,667
May	3,994	4,748	3,667
June	2,974	4,332	4,140
July	4,332	3,924	6,722
Aug.	3,924	2,337	3,057
Sept.	2,337	3,621	8,741
Oct.	3,621	2,832	3,956
Nov.	2,832	3,992	5,858
Dec.	3,992		

*Not including new orders for steel mill furnaces.
Industrial Heating Equipment Assn. Inc.

	1953	1955	1957
Jan.	122.3	118.2	114.6
Feb.	122.6	118.7	114.6
Mar.	123.3	118.9	114.7
Apr.		119.3	114.9
May		119.6	115.4
June		120.2	116.2
July		120.8	117.0
Aug.		121.0	116.8
Sept.		121.1	117.1
Oct.		121.1	117.7
Nov.		121.6	117.8
Dec.		121.6	118.0

U. S. Bureau of Labor Statistics.

Corp. says contracts for future construction totaled \$2.7 billion in that month, down 12 per cent from the 1957 period but up seasonally \$767.8 million from February's figure. *Engineering News-Record's* tabulations show that heavy construction awards are holding well above the respectable \$300-million weekly level. Dun & Bradstreet Inc. reports that building permit valuations for 217 cities came to \$564 million, the highest March on record. It was 29.5 per cent above the February figure.

On the minus side: Bookings for fabricated structural steel in March totaled only 195,970 tons, down a whopping 39 per cent from the corresponding 1957 level. Shipments for current work came to 366,598 tons, indicating that at least for the present, there has been little if any cutback in heavy construction put in place.

Trends Fore and Aft

• Any comparison of department store sales in recent weeks with year-ago figures is misleading because Easter was two weeks earlier than it was last year. Even though sales in the week ended Apr. 19 were 9 per cent below the year-ago

mark, they compared favorably with 1957's post-Easter record.

• General Electric Co. is raising prices 3 per cent on products made by four departments of its turbine division.

• Beginning with the week ended Apr. 22, the Bureau of Labor Statistics is basing its weekly wholesale price index (see Barometers of Business, Page 69) on a revised weighting structure, reflecting 1954 value weights.

• New England companies should get about \$1 billion of the \$11 billion which the U. S. will spend on missile development during the next two years, says the New England Council.

• Ferrous castings shipments declined about 13 per cent in February, reports the Bureau of the Census. Gray iron, malleable iron, and steel foundries were down about equally percentagewise. Nonferrous foundries saw their shipments drop 15 per cent from January's level.

• Orders for industrial furnaces fell to \$2,871,000 in March, the low point of the year and the lowest since last November (see chart above). Producers expressed disappointment because they had expected the month to continue the improvement noted in February.

SIMONDS

INDUSTRIAL CUT GEARS

LARGE OR SMALL HEAT TREATED OR PLAIN



SIMONDS has over 60 years' experience in cutting quality industrial gears. We can supply any type of gear in

cast or forged steel, gray iron, bronze, Meehanite, rawhide or bakelite in a full range of sizes adaptable to the material. Also heat-treated, case or flame hardened gears of carbon or alloy steel. Send us your requirements for quotation.

Custom GEAR CUTTING

SIMONDS' facilities can produce any type of custom gear from your blanks if you prefer. Same quality . . . same prompt service.

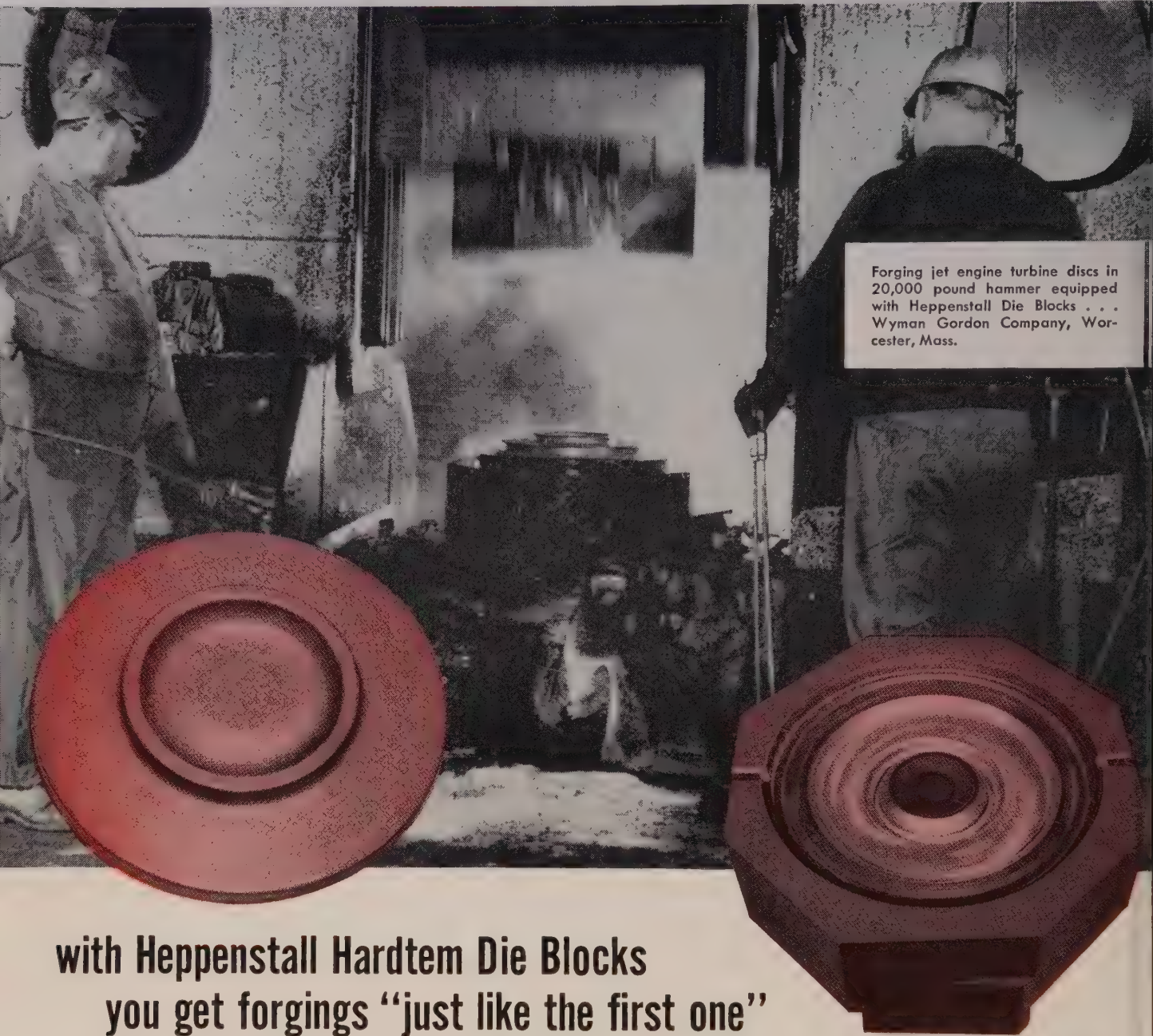


QUALITY
GEARS
FOR OVER
65 YEARS



THE
SIMONDS
GEAR & MFG. CO.
LIBERTY at 25TH PITTSBURGH 22, PA.

Forgings that **FLY** must meet rigid tolerances



with Heppenstall Hardtem Die Blocks you get forgings "just like the first one"

Tolerances are especially close for these jet engine turbine disc forgings. That's why they're forged in Heppenstall Hardtem Die Blocks. For this job, Wyman Gordon Company selected Hardtem "B" Blocks.

Holding dimensions for long runs is only one of the well known characteristics of Heppenstall Hardtem Die Blocks.

Machinability of Heppenstall Hardtem rates equally high with veteran die sinkers. When they lay out a design on Hardtem, they expect and *get* savings in cutting time, longer tool life, and a more accurate sinking.

Forged on all six faces from special Heppenstall Steel, Hardtem and other Heppenstall Die Steels are manufactured in a wide range of hardnesses to match varying customer requirements of application and machinability. If you're looking for better die block performance, contact your Heppenstall Representative.

These five Heppenstall Warehouses carry stocks of the most popular size die blocks:

Bridgeport 5, Conn. • Detroit 32, Mich • Indianapolis 27, Ind. • Los Angeles 22, Calif. • Pittsburgh 1, Pa.



DIE BLOCKS



MATERIALS HANDLING
EQUIPMENT



KNIVES



FORGINGS



RINGS



BACK-UP
ROLL SLEEVES



HEPPENSTALL

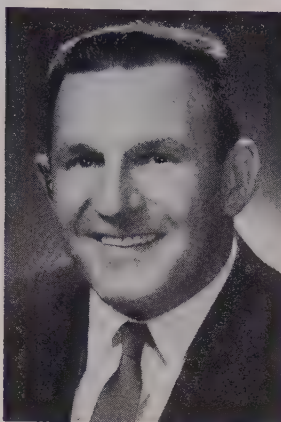
... the most dependable name in die blocks
PITTSBURGH 1, PENNSYLVANIA



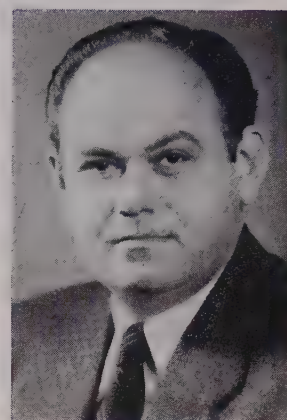
RAY R. EPPERT
president of Burroughs



J. D. MacKENZIE
Asarco president



HOWARD W. GRIESBACH
Flexonics v. p.-operations



MARC B. ROJTMAN
J. I. Case president

Ray R. Eppert was elected president, **Burroughs Corp.**, Detroit. Formerly executive vice president, he succeeds the late **John S. Coleman**.

J. D. MacKenzie was elected president, **American Smelting & Refining Co.**, New York. **R. W. Vaughan**, former president, was elected vice chairman. Mr. MacKenzie was vice president in charge of all smelting and refining operations. **R. L. Jourdan** was elected a vice president. He has been manager of the ore purchasing department since 1941.

Harry T. Bauerle Jr. was appointed sales manager of **Vidmar Inc.**, division of **Volkert Stamping Inc.**, Williamsport, Pa. The recently created Vidmar company manufactures high-quality metal storage equipment.

General Steel Castings Corp., Granite City, Ill., elected **James MacDonald** executive vice president; **Richard T. Risk**, vice president-treasurer. **W. B. Reed** was made vice president in charge of the Eddystone and Avonmore, Pa., plants.

Malcolm G. House was made industrial relations manager of **Clark Equipment Co.**'s transmission division, Jackson, Mich.

Graham B. Brown was made director of marketing, **Mallory-Sharon Metals Corp.**, Niles, Ohio. He was formerly vice president of **Tube Reducing Corp.**, and before that was with **Youngstown Sheet & Tube Co.**

Howard W. Griesbach was appointed vice president-operations, **Flexonics Corp.**, Maywood, Ill. He was vice president of manufacturing, aircraft and bellows products.

Charles M. Brinckerhoff was elected president of **Anaconda Co.**, New York, and its Chilean subsidiaries. He succeeds **Clyde E. Weed**, who was elected chairman to succeed the late **Roy H. Glover**. Mr. Brinckerhoff was executive vice president of **Chile Exploration Co.** and **Andes Copper Mining Co.**

Richard M. Stewart was elected president, **American Brass Co.**, Waterbury, Conn., subsidiary of **Anaconda Co.** He succeeds **John A. Coe**, who was elected chairman, continuing as the company's chief executive officer. Mr. Stewart was director of industrial relations at **Anaconda**.

William S. Morris was elected president of **Alco Products Inc.**, Schenectady, N. Y. Former executive vice president, he succeeds **Perry T. Egbert**, now chairman.

Kenneth M. Gleszer was elected president, **Dixon Sinteraloy Inc.**, Stamford, Conn., subsidiary of **Joseph Dixon Crucible Co.** He succeeds **Frank G. Atkinson** as president of the subsidiary. Mr. Atkinson is president of the parent firm.

R. S. Bradshaw Jr. was named president and general manager, **Texas Foundries Inc.**, Lufkin, Tex. He succeeds the late **Col. Cal C. Chambers**.

Marc B. Rojzman, formerly executive vice president, was elected president of **J. I. Case Co.**, Racine, Wis. He succeeds **John T. Brown**, who was re-elected chairman. Mr. Rojzman, formerly president of **American Tractor Co.**, became associated with Case through the merger of these companies in January, 1957.

Robert F. Reid was made manager, machine tool sales, **Union Twist Drill Co.**, Athol, Mass. He has served as sales manager for both **Reid Bros. Co. Inc.**, and **Arter Grinding Machine Co. Inc.**

Henry Newhouse, formerly assistant to the sales manager, was promoted to assistant sales manager, axle division, **Eaton Mfg. Co.**, Cleveland.

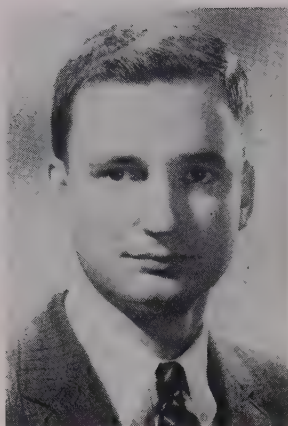
Aluminum Co. of America, Pittsburgh, elected as vice presidents: **N. R. Althaus**, controller; **F. J. Close**, general manager, sales development and commercial research divisions; **B. J. Fletcher**, general manager-engineering; **R. O. Keefer**, general purchasing agent.

Robert G. Bamber was named assistant secretary and assistant treasurer; **Edward J. Griffin**, assistant controller of the spring division of **Borg-Warner Corp.**, Chicago.

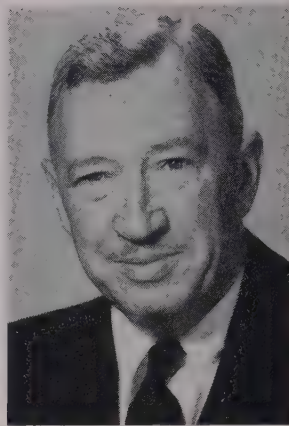
W. E. Gutzwiller was made assistant to the manager, electrical application department, **Allis-Chalmers Mfg. Co.**, Milwaukee. **T. H. Bloodworth** was made chief systems engineer. For the department's rectifier section, **D. B. Scott** was



HUGH J. PHILLIPS Jr.
U. S. Steel exec. post



WILSON BRADLEY Jr.
Endevco v. p.



HARRY L. LEYDA
Dallas Tank president



FRANK B. MITCHUM
Atkins Saw p. a.

made manager; J. B. Rice, chief design engineer; Harold Winograd, consulting engineer.

Hugh J. Phillips Jr. was appointed vice president-administration planning, **United States Steel Corp.**, Pittsburgh. He will assist the executive vice president-personnel services in organization planning, personnel and compensation, staff service activities, and over-all programs and policies.

Edward M. Cullen was named purchasing agent of **Handley Brown Heater Co.**, Jackson, Mich.

Thomas C. Petty was elected president, **Hauck Mfg. Co.**, Brooklyn, N. Y. **Mrs. M. E. C. Gerdes** was elected chairman; **William H. Oler**, vice president.

G. W. Brown was elected executive vice president, **Wagner Electric Corp.**, St. Louis. **Paul C. Ford** was made vice president-engineering and research; **R. H. Hackett**, vice president-manufacturing.

Wilson Bradley Jr. was appointed vice president-general manager, **Endevco Corp.**, Pasadena, Calif. In addition to duties as vice president, he remains active in design and development of new electronic components.

Harry L. Leyda was elected president, **Dallas Tank Co. Inc.**, Dallas. He formerly served as vice president and sales manager from 1945 to 1947. Most recently he was manager of steel plate sales at **Lone Star Steel Co.**

Charles A. Haag was appointed by **Ainsworth-Precision Castings Co.**, Detroit, to head its eastern division's production facilities. He is at Fayetteville, N. Y. He has been with Ainsworth-Precision and its predecessor firm, **Precision Castings Co.**, for 33 years.

Raymond F. Duffy was named to the new post of vice president-sales, **Tubular Rivet & Stud Co.**, Quincy, Mass. He was general sales manager.

Frank B. Mitchum was made purchasing agent, **Atkins Saw Div.**, Indianapolis, **Borg-Warner Corp.**

Joseph C. Guptill was made national product manager, reinforcing products division, **Joseph T. Ryerson & Son Inc.**, Chicago. He succeeds **Frank F. Trierweiler**, retired.

Norman J. Johnson was made manager of operations, **A. M. Byers Co.**, in charge of plants in Ambridge and South Side, Pittsburgh. He was formerly factory manager for **Flannery Mfg. Co.**, and **Fort Pitt Mfg. Co.**

James R. Craine was promoted to branch manager, east central district, **Cooper-Bessemer Corp.** He is at Mt. Vernon, Ohio.

Robert H. Bragg was named supervisor of material control for **Hercules Motors Corp.**, Canton, Ohio.

John G. Khoury was made Detroit district manager, **Sterling Grinding Wheel Co.**

Saul S. Schiffman was elected chairman, **Tenney Engineering Inc.**, Union, N. J. He continues as secretary-treasurer and chief financial officer of the company.

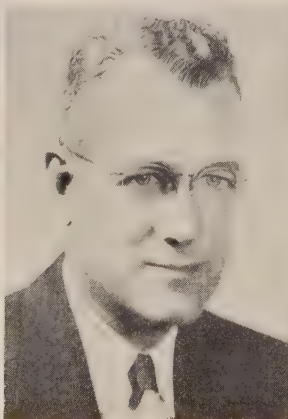
Leonard Szczepanski was made purchasing agent of the Chicago plant of **Inland Steel Container Co.**

James E. Barnes, Ann Arbor, Mich., was made sales engineer for indirect field sales by **Buhr Machine Tool Co.**

Thomas M. Stuart joined **Hallcrafters Co.**, Chicago, as sales pro-



G. W. BROWN



PAUL C. FORD
new officers for Wagner Electric



R. H. HACKETT



This is Illinois Gear


WORKS OF THE ILLINOIS
GEAR & MACHINE COMPANY, CHICAGO

HEADQUARTERS
AND WORKS OF THE
ILLINOIS GEAR & MACHINE
COMPANY, CHICAGO

manufacturer of quality gears

Come to Illinois Gear and view these plants fully manned with skilled craftsmen, under the most qualified supervisors. Here is achieved the unique combination of maximum production and precision quality control. One machine out of six ... one man out of every ten ... is devoted to quality control.

In these plants are produced the highest quality commercial gears ... spur, bevel, helical, herringbone, worm and worm gears, etc. ... ranging in size from eight gears per pound to 80,000 pounds per gear. Countenance no compromise with quality, get the utmost in service, specify and buy ILLINOIS GEARS.

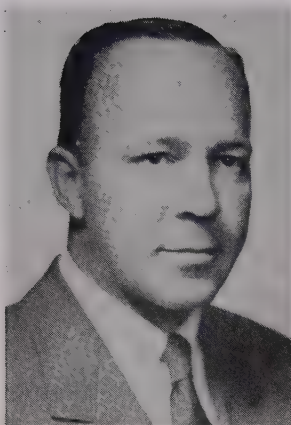
Look for this mark  ... the symbol on finer gears



Gears for Every Purpose ... one gear or 10,000 or more

ILLINOIS GEAR & MACHINE COMPANY

2108 NORTH NATCHEZ AVENUE • CHICAGO 35, ILLINOIS



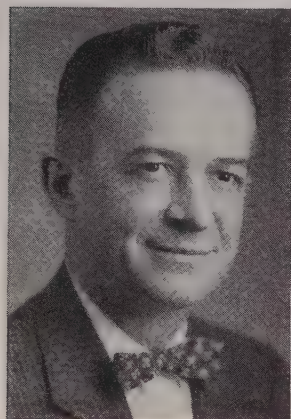
M. W. TOWNSEND
Handy & Harman adm. v. p.



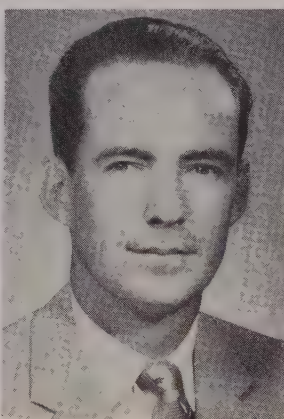
ROBERT J. CORMIER
heads Miller & Van Winkle



WILLIAM R. JULIUS Jr.
McKinney Mfg. v. p.-sales



L. KERMIT DOWLER
Wheeling Steel dept. supt.



G. V. PATTERSON
Swartwout div. gen. mgr.



FRANK J. FIELDS
heads Fosdick Machine Tool

motion manager of amateur equipment.

At Wheeling Steel Corp's Yorkville, Ohio, Works, L. Kermit Dowler was made superintendent of the cold strip department; Paul J. Pettit Jr., assistant superintendent. Mr. Dowler succeeds Owen K. Moynihan, who assumed new responsibilities at the Steubenville, Ohio, Works.

G. V. Patterson was appointed general manager, ventilator division, Swartwout Co., Cleveland. He served for the last six years as sales manager for Jenn-Air Products Co., Indianapolis.

Glenn A. Stertzbach was elected executive vice president, George L. Day Co. Inc., Buffalo. John B. King and Herbert K. Bahr were elected vice presidents.

Richard S. Ferguson was appointed purchasing agent at Flexonics Corp., Maywood, Ill., succeeding K. H. Flory, resigned.

Frank J. Fields was elected president, Fosdick Machine Tool Co., Cincinnati. He was works manager. Prior to joining Fosdick in 1957, Mr. Fields was executive vice president and general manager, Sidney Machine Tool Co.

Olin Mathieson Chemical Corp. named Carl R. Rowe general plant manager of Olin Aluminum Div.'s new rolling mill, nearing completion between Clarington and Hannibal, Ohio. He succeeds Harry E. Gude, recently made vice president-manufacturing for the aluminum division. Addison S. Farrell succeeds Mr. Rowe as plant manager of the rolling mill.

Arthur J. Rutherford was appointed director of procurement of Graflex Inc., Rochester, N. Y. He was assistant manager of procurement for Arma Div., American Bosch Arma Corp.

Jerome A. Gottschalk was appointed director of sales, Christy Co., Fremont, Ohio. He was with American-Lincoln Corp.

M. W. Townsend was elected vice president for administration and finance of Handy & Harman, New York. He was assistant to the president.

Robert J. Cormier was elected president of Miller & Van Winkle Co., Paterson, N. J. He was president and sales manager, Pattern Products Co.

William R. Julius Jr. was elected vice president-sales for McKinney Mfg. Co., Pittsburgh. He was general sales manager.

Charles W. Baker was promoted to assistant general sales manager, Chase Brass & Copper Co., subsidiary of Kennecott Copper Corp. He has been western regional manager and continues headquarters at the Chase office in Los Angeles, devoting his time to western and mid-western sales regions. Replacing Mr. Baker as western regional manager is Allan R. Armstrong, with headquarters in San Francisco. Robert H. Chittim succeeds Mr. Armstrong as staff manager-tube, and continues headquarters in Waterbury, Conn.

OBITUARIES...

W. L. Cook, chairman, Reliable Electric Co., Franklin Park, Ill., and Whitney Blake Co., Hamden, Conn., died Apr. 26.

Walter Ferris, 90, vice president, Oilgear Co., Milwaukee, died Apr. 16.

Ralph L. Ostrander, manager of labor relations, Allegheny Ludlum Steel Corp., Pittsburgh, died Apr. 20.

Dr. George V. Slottman, 54, vice president of research and engineering, Air Reduction Co. Inc., New York, died Apr. 21.

W. A. Lintern, treasurer, Lintern Corp., Painesville, Ohio, died in Florida Apr. 25.

William W. Armour, president, Armour-Porter Co., Worcester, Mass., died Apr. 14.

Warwick W. Foster, 67, a regional sales manager for Pendleton Tool Industries Inc., Los Angeles, died Apr. 13.

This automatic rock bit welder takes either regular or integral jet bits through successive shank and axial welding operations while the operator unloads and loads the free positioner.



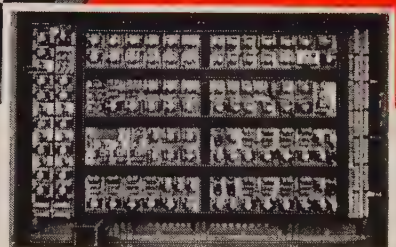
SENSATIONAL PANDJIRIS PRODUCTION WELDER

Fully Equipped with Cutler-Hammer Control

Typical of the broad trend to automation and the advanced engineering which makes it possible is the new Pandjiris AUTO-WELD-MATON* transfer type production welder for the manufacture of rock bits. Typical of automation projects, its very heart is a complex system of electrical control equipment. And typical of the best in engineering, this control equipment is 100% Cutler-Hammer.

The Pandjiris Weldment Co., St. Louis, Missouri, has long been a leader in the design and manufacture of production welding equipment, positioners, turning rolls, weld-evators, head manipulators, etc., as well as the spectacular Pandjiris AUTO-WELD-MATONS custom engineered to specific mass production requirements. Dependable performance built the Pandjiris reputation and Cutler-Hammer is proud that Cutler-Hammer Three-Star Motor Control and Cutler-Hammer Heavy Duty Oil Tight Pushbuttons are furnished as standard original equipment on all Pandjiris machines. CUTLER-HAMMER Inc., 1211 St. Paul Avenue, Milwaukee 1, Wisconsin. Associate: Canadian Cutler-Hammer, Ltd., Toronto.

*AUTO-WELD-MATON is a Pandjiris Weldment Co. Trademark



The electrical control cubicle contains all the Cutler-Hammer Three-Star Control components which control each machine motion.

CHOICE OF THE LEADERS



THE MARK
OF BETTER MACHINES



"Perfect finish retained"

"This reject problem is licked"

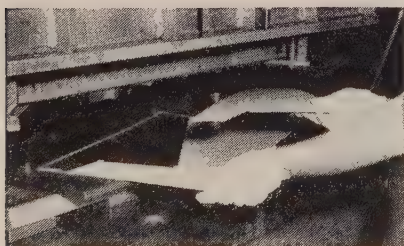
"Downtime certainly has been reduced"

"Nothing more to be desired in quality and finish"

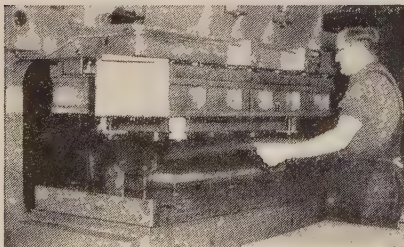
"Stands up very well under standard fabricating methods"

K. R. Craft, Vice President, The Seeburg Corp., Chicago, with one of the company's famous juke boxes. The brilliant reflectivity and durability of Nickeloid pre-plated metals is an important factor in the product's eye-catching good looks.

NICKELOID METALS SAVE 4 PRODUCTION STEPS— REDUCE REJECTS FOR THE SEEBURG CORPORATION



Standard fabricating methods are used to stamp and form juke box trim. Nickeloid Metals eliminate machinery tie-up; rejects are less than 1%.



Stamping Nickeloid chrome steel, protected with Mar-Not adhesive-backed paper which is easily peeled off. Finished part will need no polishing.

Pre-Finished Design Material is Easily Worked With Standard Fabricating Methods

The Seeburg Corporation uses Nickeloid *pre-plated* chrome steel to achieve functional beauty and attention-value . . . economically. Before switching to Nickeloid, the company did its own cleaning, plating and buffing. The job required four—sometimes five more operations than are now necessary. According to Mr. Craft, "The tremendous cost of plating and buffing was not only more expensive and much more time consuming, but the finished product had to be inspected, and the rejections on plated and buffed metals was very much higher than it is with Nickeloid. Economically, the Nickeloid Metals have proved themselves in production."

Using standard fabricating methods, Nickeloid Metals need only be stamped and formed—then assembled. By capitalizing on this pre finished *method* of production, this leading manufacturer has eliminated the machinery formerly required for plating, polishing and buffing—saved four or five production steps, and is producing a better end product *with less manpower*. Can you use these advantages in your operation?



14 finish-to-base metal combinations — sheets, coils, strips.

WRITE TODAY FOR FREE LITERATURE

AMERICAN NICKELOID COMPANY
PERU 1, ILLINOIS

NICKELOID METALS
SINCE 1898



Steel Firm Expands

Capacity to produce cold-rolled products is boosted 30 per cent at Granite City Steel Co.

GRANITE CITY STEEL CO., Granite City, Ill., has completed one of the last and most important projects in its \$33-million expansion program.

A four-stand tandem cold reduction mill and a temper or skin pass mill have been rebuilt, increasing the firm's capacity to produce cold-rolled steel products by about 30 per cent to a total of 750,000 tons a year. These include cold-rolled coils and sheets, electrical sheets, galvanized roofing and siding, galvanized sheets, tin plate, and tin mill black plate.

Precise Controls—Special features were incorporated in the rebuilt facilities. The cold mill has sensitive magnetic amplifiers which govern the controls that regulate the speeds of the work rolls in each of the four stands. An x-ray gage furnishes a constant measurement of the thickness of the strip which is rolled down to a minimum thickness of 0.0085 in.

Motors that drive the 56-in. temper mill were increased to 3200 hp. The mill was moved to a new building to tie its operation more closely with other finishing processes. Its control system also was improved by the installation of magnetic amplifier regulators.

LeTourneau Broadens Line

R. G. LeTourneau Inc., Longview, Tex., re-entered the earthmoving equipment field May 1. The firm sold its earthmoving business to Westinghouse Air Brake Co. in 1953 for about \$31 million and agreed to remain out of that field for five years.

Plans Engineering Unit

Consolidated Western Steel Div., U. S. Steel Corp., Los Angeles, will build an engineering building at its Maywood plant, that city. The division's projects include design and development planning for nuclear missile and aerodynamic programs coupled with advance metallurgical

studies on metals needed for space flight and nuclear applications.

Plans To Build in Florida

Riverside Products Co. will build a \$100,000 automatic screw machine products manufacturing plant on 30th Street W., Bradenton, Fla. Products will include brass, steel, and nylon fittings, ranging from small bearings to 5.5-in. tubing for large lift trucks.

To Make Power Equipment

Jeta Metal Fabricators Inc., Yonkers, N. Y., formed a Power Equipment Div. to produce electric generating plants and related equipment. Howard C. Beyer is general manager of the new division.

Expands Steel Warehouse

Hill-Chase Steel Co., Baltimore, built a 5000 sq ft addition to its warehouse in that city, bringing the firm's total available floor space to 75,000 sq ft. W. E. Hill is president.

To Handle Valves, Fittings

Midcontinent Tube Service Inc., Evanston, Ill., organized an affiliated company, Midco Valves & Fittings Inc., to provide its pipe customers with necessary adjuncts to tubular steel products.

Bliss Closes Press Plant

E. W. Bliss Co., Canton, Ohio, has suspended press manufacturing operations at its Toledo, Ohio, plant. All press building is consolidated in its plants at Canton, Ohio, and Hastings, Mich.

Testing Reactor Planned

Industrial Testing Reactors Inc., Raleigh, N. C., will construct a privately owned nuclear testing reactor. The project will cost the newly organized firm about \$12 million.

Champion Motors Renamed

Champion Motors Co., Minneapolis, which recently sold its Outboard Motors Div., has changed its name to Airmotive Machining & Engineering Corp.

Opens Eighth Pipe Mill

Page-Hersey Tubes Ltd., Toronto, Ont., officially opened its eighth pipe and tubing mill at Welland, Ont., with the start of production at a \$5 million electric resistance weld steel pipe mill. The new mill produces pipe from 2 $\frac{3}{8}$ in. to 8 $\frac{5}{8}$ in. OD and has an annual capacity of 120,000 tons. The firm's total annual capacity is about 535,000 tons of steel pipe and tubing.

Industrial Cranes

Borg-Warner Corp.'s Ingersoll Products Div. renamed its Industrial Crane & Hoist operation Borg-Warner Industrial Cranes. The general offices and main plant of Industrial Cranes are in Chicago at 1536 S. Paulina St. and are supplemented by additional facilities at 1000 W. 120th St. Industrial Cranes is expanding the scope of its operations to include a more complete line of related material handling equipment.

Westinghouse To Build

Westinghouse Electric Corp., Pittsburgh, is building a manufacturing and repair division plant and an adjoining office building at Glassport, Pa. The plant will contain 62,600 sq ft of floor space. R. L. Bogardus will be manager.

Buys Interest in Cochrane

General Waterworks Corp. purchased one-third of the outstanding common stock of Cochrane Corp., manufacturer of equipment for the treatment of industrial water supplies. Main offices of both companies are in Philadelphia. Cochrane, through its Metal Products Div., Pottstown, Pa., also fabricates a wide variety of heavy carbon steel and alloy products.

Offers New Gear Service

A new production facility designed to meet the need for accurate and ultraprecision gears in low and moderate production quantities has been established by National Broach & Machine Co., Detroit. Main emphasis will be placed on production of gears for engineering development and prototype work for

the metalworking industries, as well as for research laboratories and universities doing special contract research work. The type of work planned for the facility can result in solutions of difficult gear production processing problems which can be passed on to jobbers for production runs.



ASSOCIATIONS

Metal Powder Industries Federation (MPI) has been organized to succeed the Metal Powder Association. MPI includes four trade associations and a newly created American Powder Metallurgy Institute. Officers of the federation are: President, Dr. G. A. Roberts, Vanadium-Alloys Steel Co., Latrobe, Pa.; executive secretary, Kempton H. Roll who will also serve as administrative secretary of each of the five divisions. Presidents of the member associations who will serve also as vice presidents of the federation are: Metal Powder Producers Association, E. H. Klein, New Jersey Zinc Co., New York; Metal Powder Core Association, D. L. Almquist, Stackpole Carbon Co., St. Marys, Pa.; and Ferrite Manufacturers Association, C. L. Snyder, General Ceramics Corp., Keasbey, N. J. Selected as chairman of the American Powder Metallurgy Institute and vice president of the federation is R. C. Burgess, Burgess-Norton Mfg. Co., Geneva, Ill.

American Welding Society, New York, elected G. O. Hoglund, Aluminum Co. of America, Pittsburgh, president. Named vice president is C. I. MacGuffie, General Electric Co., Schenectady, N. Y.

American Supply & Machinery Manufacturers' Association, Cleveland, elected these officers, effective June 1: President, Lyman H. Bellows; first vice president, Fred C. Emerson; second vice president, Samuel D. Conant; secretary, Clare Payne; and treasurer, Paul A. Johnson Jr.

Joseph D. Lykins, Wheeling Steel Corp., was elected president of the **American Society of Lubrication Engineers**, Chicago.



NEW ADDRESSES

Morgan Construction Co., Worcester, Mass., moved its Pittsburgh office to 300 Cedar Blvd.

Hardie Mfg. Co. moved from Hudson, Mich., to Wilkes-Barre, Pa.

Atlas Copco Eastern Inc. moved its executive headquarters and northeast district offices from Paterson, N. J., to 610 Industrial Ave., Paramus, N. J.

Head offices of **Mannesmann International Ltd.** have been moved to 680 Fifth Ave., New York. Mannesmann International, headed by Dr. Gerhard Wagner, is the holding company of all Mannesmann enterprises in the U. S. and Canada, including Mannesmann Tube Co. at Sault Ste. Marie, Ont.

Harris-Intertype Corp. moved its general offices to the Illuminating Bldg., 55 Public Square, Cleveland 13, Ohio.

Continental-Diamond Fibre Corp., Newark, Del., moved its St. Louis sales office to 1246 Hampton Ave., St. Louis 10, Mo. The firm is a subsidiary of Budd Co., Philadelphia.



CONSOLIDATIONS

General Fireproofing Co., Youngstown, completed purchase of **Otis Steel Products Corp.**, Ellicottville, N. Y., maker of movable steel office partitions.

Universal Marion Corp., Washington, purchased **Scullin Steel Co.**, St. Louis.

Dow Chemical Co., Midland, Mich., acquired **Extruders Inc.**, Hawthorne, Calif., and will operate the property as a subsidiary. The west coast firm supplies polyethylene film.

Polymer Corp., Reading, Pa., purchased **Halex Corp.**, Detroit, maker of pressed and sintered nylon powders.

MacDermid Western Inc., Fennville, Mich., a wholly owned sub-

sidary of **MacDermid Inc.**, Waterbury, Conn., has been absorbed by the parent company. The firm makes metal cleaning, plating, and finishing chemicals.

Hooker Electrochemical Co., Niagara Falls, N. Y., will merge with **Shea Chemical Corp.**, New York, subject to approval of stockholders on May 28. The consolidated firm will be known as **Hooker Chemical Corp.**



NEW PLANTS

Associated Piping & Engineering Co. will open its Southern Div. plant at Gulfport, Miss., about June 1. Paul Keibler is manager. The plant will produce prefabricated pressure pipe assemblies.

A new molten salt pickling plant has been put into operation at **International Nickel Co. Inc.'s** Huntington, W. Va., Works. The unit provides an effective method of removing oxide scale from Inco's high nickel-chromium alloy tubes, rods, shapes, wire, and strip prior to further processing. The unit was built as an addition to the cold drawing department at a cost of \$1.1 million.

Chromium Corp. of America, New York, opened a chromium plating plant at 8701 Union Ave., Cleveland. The operation specializes in the plating with chromium of cylinder liners for diesel oil engines, together with marine, pipeline, transport, and other industries utilizing diesel power.

Perth Metal Industries Ltd., Stratford, Ont., is constructing a 10,000 sq ft plant to manufacture self-lubricating bearings under license from Chrysler Corp., Detroit. The firm will also make cored and solid bar stock and powder metal machine parts.

Sutorbilt Corp. has consolidated office and sales facilities with manufacturing equipment in a newly expanded \$1.5 million plant at 2966 E. Victoria St., Compton, Calif. The firm makes positive pressure blowers, vacuum pumps, and vapor compressors. The parent company is Fuller Co., Catasauqua, Pa.

When you need

BASIC CHEMICALS FOR METALS



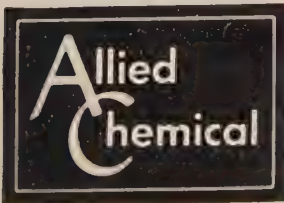
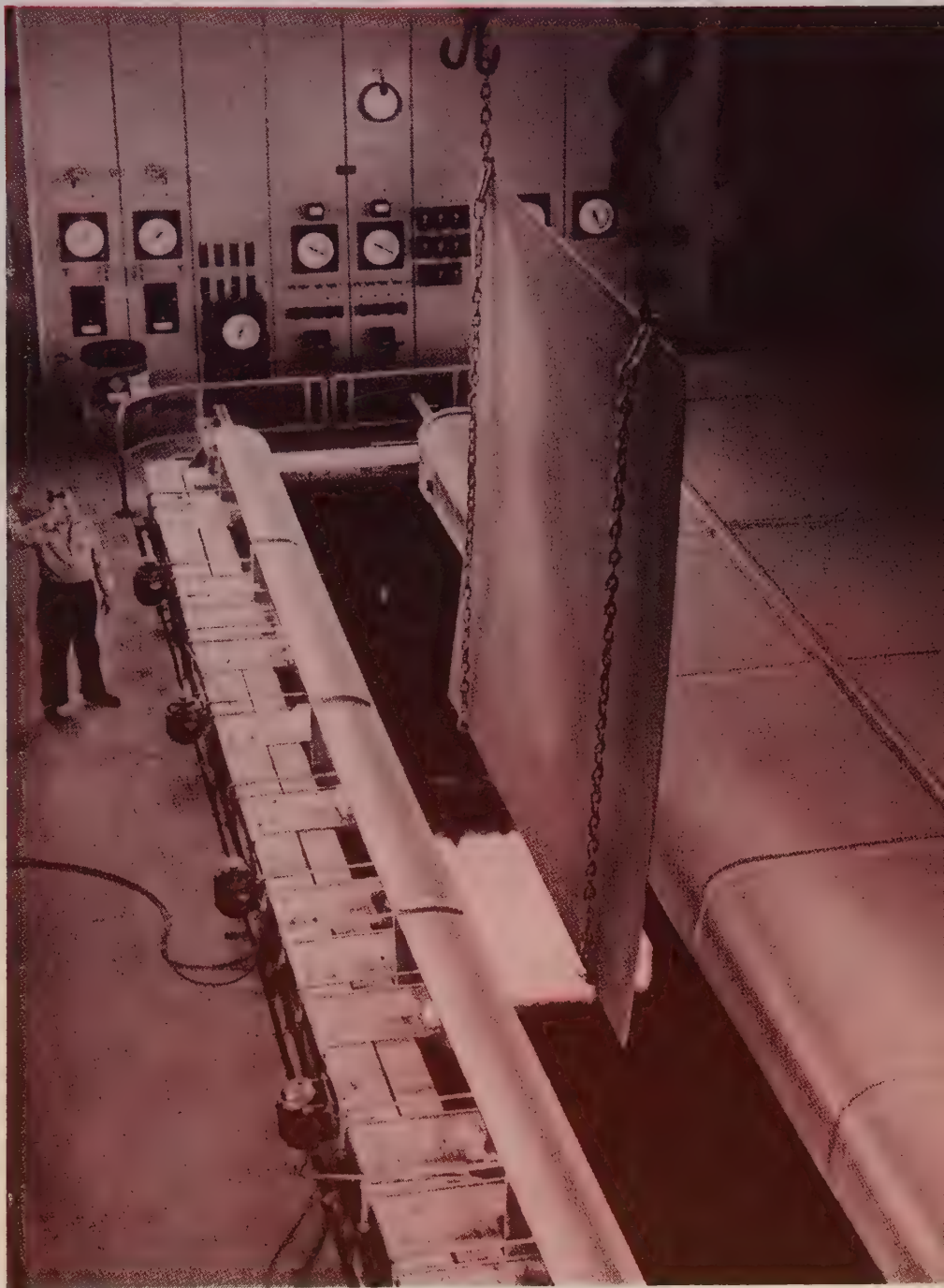
look to General Chemical!

Here's why...

At practically every stage of metal-making and metal-working, you will find need for basic chemicals produced by General Chemical. These chemicals are readily available from a nationwide network of plants and conveniently located stock points. You're sure of uniform quality, prompt deliveries, and experienced technical service whenever you need it. So specify *General* for all these basic chemicals:



Sulfuric Acid
Hydrochloric (Muriatic) Acid
Nitric Acid
Hydrofluoric Acid
Sodium Fluoride
Sodium Bifluoride
Trisodium Phosphate
Sodium Metasilicate
Oxalic Acid
Fluoboric Acid
Potassium Fluoborate
Sodium Fluoborate
Ammonium Fluoborate
Lead Fluoborate
Tin Fluoborate
Copper Fluoborate
Iron Fluoborate
Nickel Fluoborate
Cadmium Fluoborate
Baker & Adamson® Laboratory Reagents

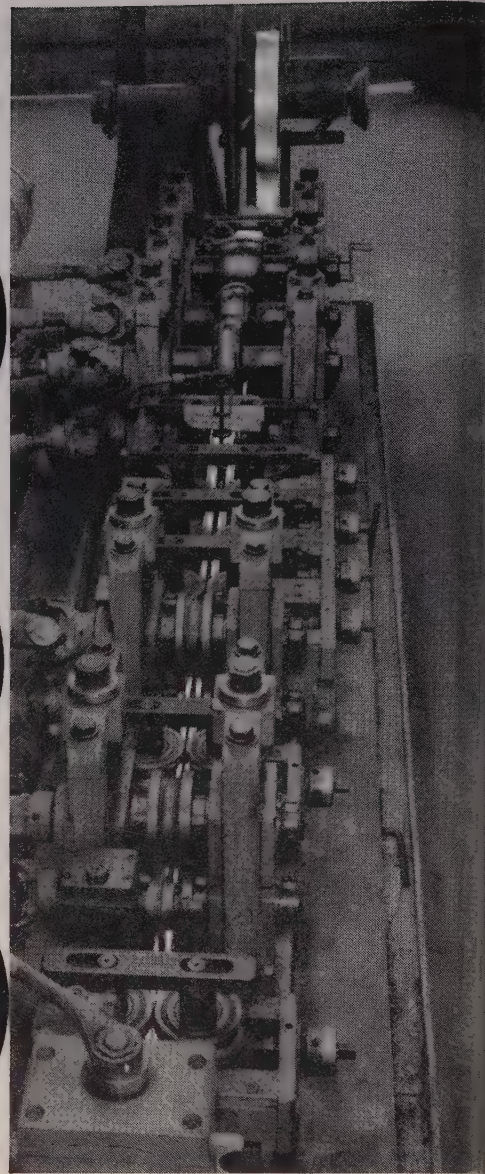


Basic Chemicals for American Industry

GENERAL CHEMICAL DIVISION

40 Rector Street, New York 6, N. Y.

Offices: Albany • Atlanta • Baltimore • Birmingham • Boston • Bridgeport • Buffalo • Charlotte • Chicago • Cleveland (Miss.) • Cleveland (Ohio) • Denver • Detroit • Houston • Jacksonville • Kalamazoo • Los Angeles • Milwaukee • Minneapolis • New York • Philadelphia • Pittsburgh • Portland (Ore.) • Providence • San Francisco • St. Louis • Seattle • Kennewick, Vancouver and Yakima (Wash.) In Canada: The Nichols Chemical Co., Ltd. • Montreal • Toronto • Vancouver

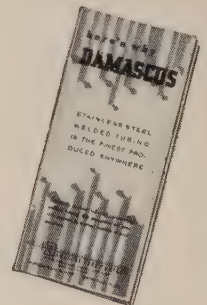


Warehouse Stocks Backed By Production Capacity

Damascus is a completely equipped, modern plant, able to offer stainless steel tubing in a wide range of standard A.I.S.I. analyses plus special alloy grades.

Prompt mill deliveries are possible from mill inventories, and large stocks of stainless strip on hand usually permit us to complete rush orders within a few days.

Supplementing our fast mill service are well-stocked warehouses of pipe and tubing conveniently located in major industrial areas. For prompt *local* service and immediate delivery of Damascus tubing, get in touch with your local Steel Service Center.



SEND FOR CATALOG TODAY



STAINLESS STEEL TUBING AND PIPE
GREENVILLE, PENNSYLVANIA



Technical Outlook

TOMORROW'S POWER SOURCES—Instead of motor generator, battery, or radioactive source, you may have to get used to terms like "oscillating electromagnetic generator, thermopile generator, ion exchange membrane, fuel cell, photovoltaic battery." That's the conclusion Air Force sponsored investigators reached at Oklahoma A&M College. They list such devices as "unconventional power sources (for tomorrow) which appear most promising."

SLOW QUENCH—Slower than water and faster than oil in its ability to remove heat, a polyvinyl alcohol solution developed by International Harvester is being looked on as a quenching milestone. A polyvinyl alcohol quench costs about one-tenth as much as oil, is nontoxic, will not flame, and does not have to be washed off.

SALT REFINING—Some metals dissolve readily in their fused salts (alkali metals, alkaline earths, bismuth, cadmium, rare earths). Stanford Research Institute, Menlo Park, Calif., is using this property to purify nickel contaminated with cobalt. The material is dissolved in nearly molten nickel chloride (1850° F). On cooling, the nickel crystallizes out in almost pure state.

BACTERIA EXTRACT METALS—Kennecott Copper Corp. is breeding metal loving bacteria to help extract metal that is lost as waste. Conventionally, waste water from copper mines has been percolated and repercolated through ore waste dumps to leach out the copper. When bacteria are inoculated into the ferric sulfate-sulfuric acid leaching agent, the amount of copper recovered increases substantially, says Kennecott.

CERMET FUTURES—Investigators of high temperature cermets will do better to concentrate on refractories which resist oxidation and are chemically stable, thinks Dr. Alan Searcy, Mineral Technology Division, University of California. He says that the high melting silicides are the most promising and points to molybdenum disilicide as a leading contender: High temperatures form a

protective surface of almost pure silica glass. The platinum series are still in the running as bonding metals, but he puts forth little hope of finding a stable combination.

OXYGEN UNATTENDED—The Linde Co. oxygen plant at U. S. Steel's South Works, South Chicago, Ill., is designed for unattended operation. The plant automatically produces oxygen at the rate required by the mill and keeps storage tanks for peak operations and standby filled. It is backed by a network of other on-site Linde plants in the area and Linde's large liquid oxygen producing facility at East Chicago, Ind.

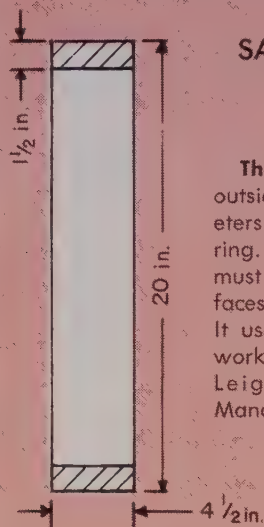
TITANIUM SPREADS—Rem-Cru A-55 titanium is available in expanded metal form. One use: Packing for chemical absorption and distillation towers. Penn Metal Co. Inc., Parkersburg, W. Va., can supply it.

MELTING NEWS—A process classified as "secret" by the government is reputed to be able to produce alloys of refractory metals on a continuous basis at one-fourth the cost of the best present methods. Alscope Explorations Ltd., a Canadian firm with offices in Passaic, N. J., holds the patents.

ALUMINUM ENGINES—Hi-si, an aluminum casting alloy containing more than 20 per cent silicon, is proposed by Alcoa for engine blocks. The hard material (140 Brinell) is machinable with modern tools. Machined surfaces are characterized by hard silicon islands separated by oil-holding aluminum pockets.

PUSH SELENIUM, TELLURIUM—Battelle Memorial Institute, Columbus, Ohio, is probing for new uses of the metals. Backed by eight leading selenium and tellurium producers, researchers expect to turn up applications in metals, organic chemicals, electrochemical solutions, and semiconductors.

Higher Cutting Speeds . . .



SAVE \$1.70 a PART

The job: Rough turn the outside and inside diameters of this forged steel ring. About 1/2 in. of stock must come off both surfaces. It takes one pass. It used to take two. The work is being done at Leighton Machine Co., Manchester, N. H.

OLD METHOD

Cutter: High Speed Steel
Speed: 515 surface feet per minute
Feed: 0.005 inch per revolution
Time: 20 minutes

NEW METHOD

Cutter: Carbide
Speed: 2500 surface feet per minute
Feed: 0.015 inch per revolution
Time: 3 minutes

COST CRISIS . . . How To Beat It

Boost Your Machining Speeds

Faster cutting can help you beat the cost crisis. That's the advice of cutting experts. Their premise: Machines and tools can produce more than most production men think

PRODUCTION men who strive for long tool life often underuse the capacity of their machines and inadvertently add to the cost of their operation.

The secret of economical tool life (and machine operation) lies between two extremes: Shooting for longevity alone has been likened to running a \$50,000 machine to baby a \$10 cutter. Neither can you run a machine at top speeds for all cuts.

A practical answer is to find the tool life that will give you the lowest cost per piece.

The approach is being used at General Electric's DC Motor & Generator Dept., Erie, Pa. It saved more than \$100,000 in production costs last year through better speeds and wider use of throwaway cutters (STEEL, Mar. 10, p. 144).

Why? — The move to higher

speeds pays off in at least two ways. First, and most obvious, it takes less time to get the metal off. Second, chances are you'll get a better cut and, normally, a better surface finish.

Leighton Machine Co., Manchester, N. H., is machining rings from forged, low carbon steel. (See exhibit.) Leon H. Rice Jr. says the rough turning job, removing about 1/2 in. of stock from the outside and inside diameters, used to take two passes on each diameter at relatively low speeds and feeds. When Leighton put the job on a new Jones & Lamson 9A-4 1/2 turret lathe, it switched from HSS to carbide and boosted the speed nearly five times. The company is getting a better surface finish than it did before, and it takes only one pass.

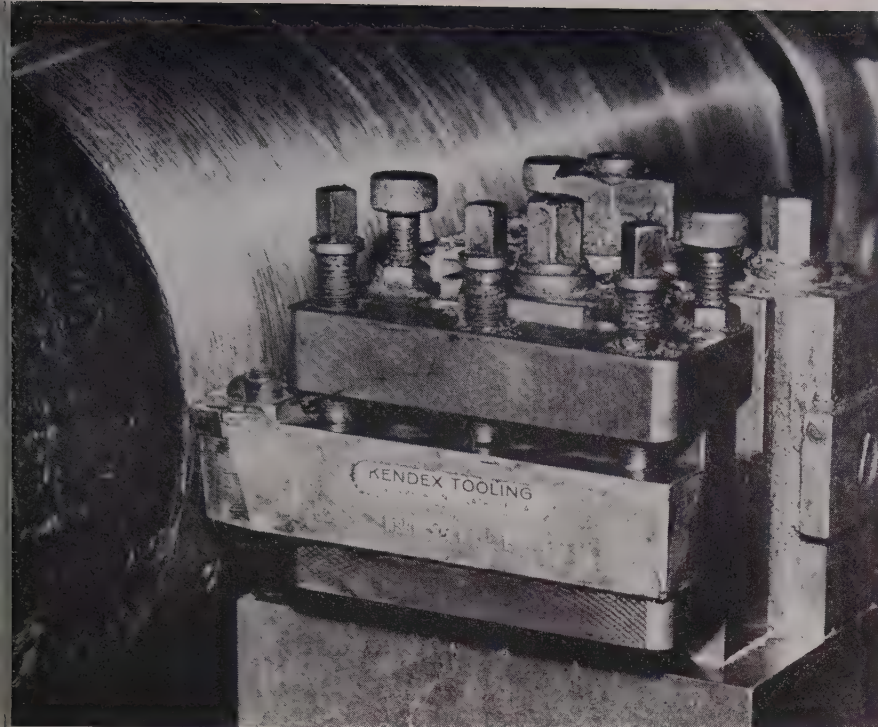
Higher speeds can, in effect, add

to your capacity. Or they make it possible for you to use fewer machines to get the same amount of work. At Arter Grinding Machine Co., Worcester, Mass., production men refigured all their cutting speeds on a line of lathes. Many were boosted. Seven machines are now doing the work that formerly required 17.

Engineers at Ford Motor Co.'s Dearborn, Mich., plant put in new machines with higher speed capabilities and got a 400 per cent increase in output. Capital tied up in assets for the job is about one-sixth what it was. A 250 per cent improvement in surface finish is also reported.

Cleaner Cut—Improved surface finish is the ace-in-the-hole for real cost cutting. It may give you that required finish without the extra pass. More important, it may give it to you without subsequent grinding.

The tool does a more efficient job of cutting. At low speeds, the



Throwaway cutters give a 125 to 150 microinch finish on this scaly, hot-rolled steel pipe. Brazed tools used to give only 600 to 800. With the new cutters, speed was boosted to 744 sfpm, double the old rate

metal ahead of the tool is crowded, then torn away. At high speeds, the metal separates in a more nearly true form of shear. Forces on the tool tip may decrease as speeds go up, say some authorities.

Test Data—Researchers at GE's Metallurgical Products Dept., Detroit, spend a lot of time learning the gains and the losses that go with an increase in cutting speed. They recently ran a cost study comparing high speed turning to grinding on one job. Here's what they report.

The test was run on a several-year-old Monarch lathe. An older machine was deliberately selected so conditions found in most plants could be duplicated. Cost studies pointed up the relative efficiency of getting a 10 to 15 microinch finish with grinding and with high-speed turning, using GE's 0-30 cemented oxide (ceramic) cutting tool. Speed was 800 sfpm; feed was 0.005 in. per revolution.

Here's what their cost breakdown showed: Grinding—17.3 minutes per piece, \$2 machine cost per piece, \$2.72 total cost per piece. Turning—8.1 minutes per piece, 0.62 cent machine cost per piece, \$1.64 total cost per piece.

Turning will not replace grind-

ing as a machining method. Grinding has much finer capabilities when it comes to close-tolerance sizing and high grade finishing. But you may be grinding parts with size and finish tolerances that are within the range of good single-point machining practice.

Throwaways—Generally, at low cutting speeds you'll need positive rake cutters to keep cutting forces down. As speeds go up, the cutting forces actually drop, and tool angles

are less critical. You may be able to make the switch from brazed or solid tools to throwaways and open up a new area for cost reduction—no tool grinding, shorter setup time.

Example—One job at Globe Hoist Co., Philadelphia, involves the turning of hot-rolled steel pipe that's 7½ in. in diameter. The firm is now using Kendex cutter inserts made by Kennametal Inc., Latrobe, Pa.

Machining speed was more than doubled (to 744 sfpm), and feed was cut about 25 per cent on both roughing and finishing cuts. Globe Hoist used to get a 600 to 800 microinch finish; it now gets 125 to 150. Tool cost dropped from 96.3 to 23.6 cents per piece.

Requirements—What does it take to boost cutting speeds to, say, over 650 sfpm on steel? Primarily, you'll need rigidity in the work-piece, the machine, and the cutting tools. Feeds ought to be positive with little play in the gear train—the same goes for spindle speeds.

Many machines in use are rugged enough for these speeds. The most common barrier to higher speeds is the operator or the supervisor who is used to thinking in terms of 100 or 300 sfpm and fears the consequences of cutting faster.

On all but the most difficult alloys, you will probably be rewarded with gains in efficiency.

• An extra copy of this article is available until supply is exhausted. Write Editorial Service, STEEL, Penton Bldg., Cleveland 13, Ohio.

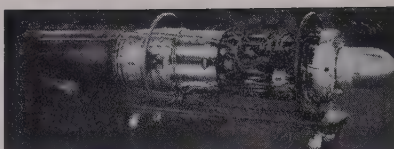
COST CRISIS COMPETITION



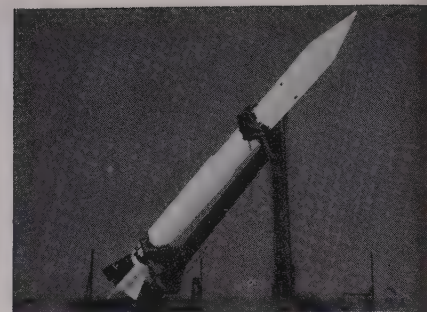
This article is part of a campaign to help industry achieve lower unit production costs. The accompanying example and others to follow are samples of what the editors of STEEL are looking for in their nationwide search for companies that have brought about important cost savings through more efficient use of capital equipment. Does your company qualify? If so, enter the Cost Crisis Competition. Write to the Cost Crisis Editor, STEEL, Penton Bldg., Cleveland 13, Ohio, for your awards kit.



AIRFRAMES



JET ENGINES



MISSILES

Preview of Space Age Metals

WHAT materials will be used in tomorrow's airframes, engines, and missiles?

You can get a good idea from the tables below. The information comes from a survey of 31 airframe,

engine, missile, and machine tool companies. Curtiss-Wright Corp. made the study for the Manufacturing Methods Branch, Air Materiel Command, Wright-Patterson Air Force Base, Dayton, Ohio.

Here are the applications, the metals now being used, and those being proposed as replacements.

• An extra copy of this article is available until supply is exhausted. Write Editorial Service, STEEL, Penton Bldg., Cleveland 13, Ohio.

Major Airframe Components and Their Alloys

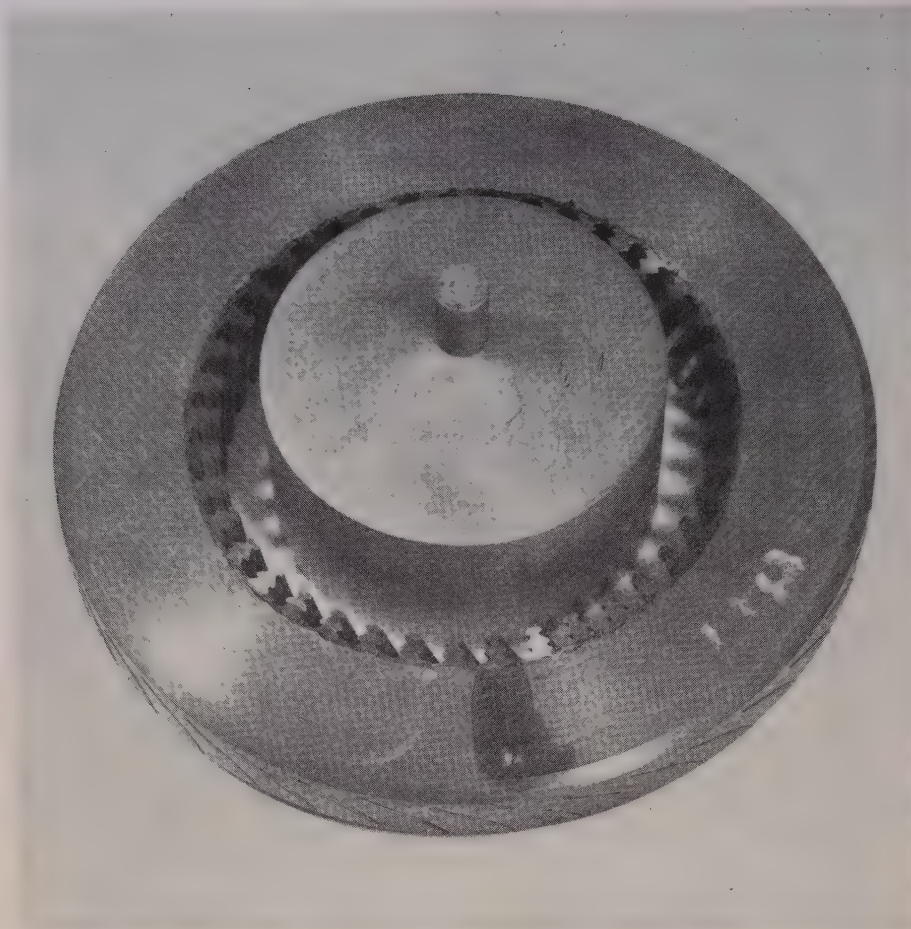
COMPONENT	METALS NOW USED	PROPOSED
FUSELAGE		
Structural Members, Frames, Spars, Longerons	Aluminum (75%), 4130 (40 Rc), Ti 6Al-4V, hot work die steels (55 Rc), 8740 (40 Rc)	4340 (50 Rc), hot work die steels (55 Rc), Ti 6Al-4V
Skins—Panels	Aluminum, Al honeycomb, 301, 316, 321, 410, 17-7PH, 19-9 DL	17-4 Mo, 17-7 PH, brazed stainless honeycomb, 410
Attach Fittings	303, 321, 4130 (40 Rc), 4140 (40 Rc), 4340 (40 Rc), 8630 (40 Rc), hot work die steels (50 Rc)	A-286, Inconel X, 4340 (55 Rc), hot work die steels (55 Rc), AM 350, AM 355, 12 MoV
WINGS		
Skins (Sculptured)	Aluminum (80%), 301, 321, 17-7 PH, com. pure Ti	Brazed stainless honeycomb envelopes, 410, 17-4 Mo, 17-7 PH, hot work die steels, 321
Structural Members	Aluminum (75%), 17-4 Mo, 17-7 PH	17-4 Mo, 17-7 PH, AM 350, AM 355, hot work die steels (55 Rc)
Attach Fittings	4140 (40 Rc), 4340 (40 Rc), Ti 6Al-4V, hot work die steels (55 Rc)	Hot work die steels (55 Rc), A-286, 15-7 Mo, 17-4 Mo, 17-7 PH, 12 MoV
LANDING GEAR		
Frames, Rods	4340 (40 Rc), 8630 (40 Rc), 4340 (50 Rc), hot work die steels (55 Rc)	4340 (55 Rc), hot work die steels (55 Rc)
Fittings, Brackets	4340 (40 Rc), A-286, 410, HS-21	15-7 Mo, A-286, 410
Hydraulic Pumps	4340 (40 Rc), 410, 440	410, hot work die steels (55 Rc)
ENGINE MOUNTS	4340 (40 Rc), 410, A-286	A-286, 410, hot work die steels (55 Rc)
EMPENNAGE		
Skins	Aluminum (80%), 301, 321, 410, com. pure Ti	410, 17-4 Mo, 17-7 PH, 19-9 DL, Inconel X, Ti 6Al-4V, hot work die steels (55 Rc)
Structural Members	Aluminum, 4340 (40 Rc), 8740 (40 Rc), 17-7 PH	17-4 Mo, 17-7 PH, 4340 (55 Rc), AM-355, hot work die steels (55 Rc)
Attach Fittings	4140 (40 Rc), 4340 (40 Rc), 17-7 PH, AM 350, hot work die steels (55 Rc)	17-7 PH, AM 350, 4340 (55 Rc), hot work die steels (55 Rc)

Major Jet Engine Components and Their Alloys

COMPONENT	METALS NOW USED	PROPOSED
Forward Frame, Gear Boxes	1722 AV, Chromalloy, mag-thorium, 8740	17-7 PH, Ti 7Al-4Mo, Ti 6Al-4V
Hubs, Shafts	4340, Ti 6Al-4V, AMS 6302, AMS 6304	A-286, 410, 431
Compressor Discs	AMS 6302, AMS 6304, 410, 422, 431, 17-7 PH, Ti 6Al-4V, 4340 (32 Rc)	1722 A, 410, 431, 17-7 PH, 19-9 DL, AM-350, A-286, Ti 6Al-4V, Ti 7Al-3Mo
Compressor Rotor Blades	410, 431, 17-7 PH	403, 17-7 PH, 19-9 DL, AM-350, A-286
Compressor Stator Blades	410, 17-7 PH	403, 17-7 PH, 15-7 Mo, AM-350
Spacers	Ti 6Al-4V, 4340, A-286, 316	Inconel X, A-286, Vasco Jet 1000
Compressor Housing	310, 321, Chromalloy, mag-thorium	A110-AT, A-286
Center Main Bearing Support	310, A-286	A-286, R-235
Combustion Chamber, Manifold Shrouds	310, N-155, A-286, Hastelloy B	R-235, HS-25, Rene 41
Turbine Inlet Nozzle	Hastelloy B	R-235
Turbine Wheel	A-286, Discaloy, AMS 5616	A-286, M-308, Inconel 901, Waspaloy, D-979
Turbine Shaft	A-286, 4340	A-286, Inconel 901, M-308, W545
Turbine Rotor Blades	HS-31, M-252, U-500, A-286	U-500, Inconel 700, Inconel 713, GMR-235, GMR-235D, HS-31, R-235, coated moly
Turbine Stator Blades	A-286, HS-25, Hastelloy C, Refractaloy 80	Rene 41, Inconel 713, Inconel 700
Turbine Stator Case	A-286, N-155	R-235, Rene 41
Reheat Burner	HS-25, N-155, 17-7 PH	Rene 41, Inconel 702
Rear Main Bearing Support	A-286	Inconel X, Inconel W

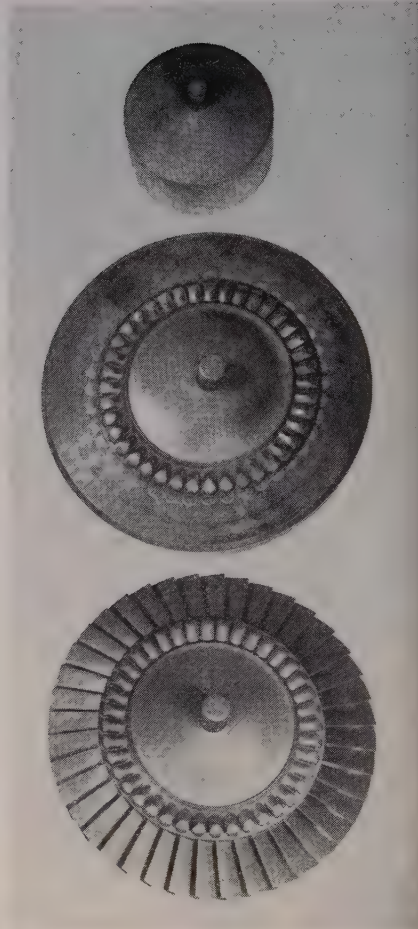
Major Missile Components and Their Alloys

COMPONENT	METALS NOW USED	PROPOSED
Nose Cone	303, 321, 17-7 PH	A-286, beryllium, molybdenum
Skin	Aluminum, 17-7 PH, 17-4 Mo, 302, 321, com. pure Ti	17-4 Mo, 17-7 PH, A-286, AM-350, AM-355, Rene 41
Structural Members	Aluminum, 4340, 17-4 Mo, 17-7 PH, Ti 6Al-4V	15-7 Mo, 17-4 Mo, 17-7 PH, A-286, 12 MoV, hot work die steels (55 Rc)
Rings, Attach Fittings	4340 (50 Rc), 4330 (50 Rc), 410, 17-4 Mo, 17-7 PH, 19-9 DL, Ti 6Al-4V	A-286, J-1570, M-252, R-235, Ti 6Al-4V, Ti C110 M, Ti 16V-2-1/2-Al, Ti B120 VCa
Pressure Tanks	4330, 4130, 4140 (50 Rc)	Hot work die steels (55 Rc)
Fuel Controls	Aluminum, magnesium, A-286	U-500, N-155, M-252, A-286, HS-25, S-816
Fuel Control Housing	Aluminum, 301, 321, 347	A-286, Rene 41, R-235
Combustion Chamber	17-7 PH, AM-350, AM-355	A-286, R-235, Rene 41, J-1570, M-252, Inconel 901, Inconel X
Tail Cone Assembly	17-7 PH, 19-9 DL, AM-350, AM-355	AM-350, AM-355, N-155, A-286, U-500, M-252, Inconel X



Turbine blades are positioned and the airfoil sections sealed in a Kirksite ring. The assembled ring is put in a holding cavity in a press die and held by the top die. The hot billet, placed in the center of the ring, extrudes

under and around the blade roots. Only minor machining is needed to remove excess metal from the wheel face. Photo at right shows the billet, the extruded wheel, and the wheel after the Kirksite has been melted away



Extrusion Slashes Wheel Assembly Costs

Tailored for building turbine wheels, the process bids fair to solve other problem jobs. One benefit: The need for close precision on blade root forms is eliminated

HOT EXTRUSIONS may be the answer to making low cost turbine rotors.

Ford Motor Co.'s engineering research group, in co-operation with Steel Improvement & Forge Co., Cleveland, has developed an inexpensive method of producing turbine and compressor rotors by extruding the wheel around the blade roots on a 30,000-ton forging press.

The process was developed by Ford engineer Lester I. Webb. Steel Improvement has been granted a

production license. James J. Russ, technical director of the Cleveland firm, says it is negotiating production contracts now; it hopes to start on one run within a few months.

Potential—The high cost of producing rotors to withstand high temperatures has been a major stumbling block in the development of a practical gas turbine engine for autos. Mr. Webb's process may bring it closer to reality.

Right now, it can be used to turn out rotors for liquid propellant mis-

sile engines, for jet engines, small starting motors, and marine turbines. Messrs. Russ and Webb think the method also can be adapted for gear manufacturing.

New Vs. Old Method—Present methods of making turbine rotors usually include close tolerance broaching of both blade roots and blade root cavities. The extrusion process obviates such precision.

Blade roots can be used as cast or forged with no dimensional accuracy needed as long as stress requirements are maintained. "This does away with the time and money needed to keep the proper dimensions between the blade air foils and roots which are necessary in

machining or casting," says Mr. Webb.

Because the extrusion process provides a mechanical lock, it avoids rimping problems which make for rotor failure, and it also gives a continuous grain flow structure between the blade roots and the hub which makes for a stronger bond.

Costs—Savings are significant. Webb indicates that Ford paid \$1000 for a wheel machined from cast material in early experiments. Production wheels have cost \$500 more than \$20,000. Mr. Webb says it's now possible to make a comparable wheel for less than \$100, including the cost of the blades which are about \$1.35 each. The finished products meet rigid safety specifications.

Steel Improvement has tried almost every type metal and alloy for rotors. Mr. Russ believes that materials which withstand tempera-

tures in the 3800 to 4000° F range can be worked. Molybdenum, columbium, and tantalum are in this area.

Ford and Steel Improvement have a prototype gas turbine rotor made of 422 stainless with carbon steel inserts. Its price: About 61 cents a pound. A rotor with a hub of Udimet 500 with carbon steel inserts costs about \$4.90 a pound.

Outlook—Messrs. Russ and Webb indicate the process lends itself to automation. Continuous forging of rotor blades could be run down one line and meet the hubs which are chopped off in proper lengths from billets. The blades can automatically be placed in the retaining ring and held while the matrix is poured around them. Electronically actuated forging presses can be used to ram home the hub billets, eject finished parts, and carry them to final minor machining.

Detects Vibration

Serious breakdowns are frequently avoided by immediate sensing of vibration increases

POTENTIAL failures get faster attention when you install a device called a vibration detector, says William H. Swann, assistant plant manager, Pacific Northwest Alloys Inc., Spokane.

He estimates savings have come to \$500 a year since he put one on a large air compressor three years ago. (It supplies his firm's production and maintenance air needs.)

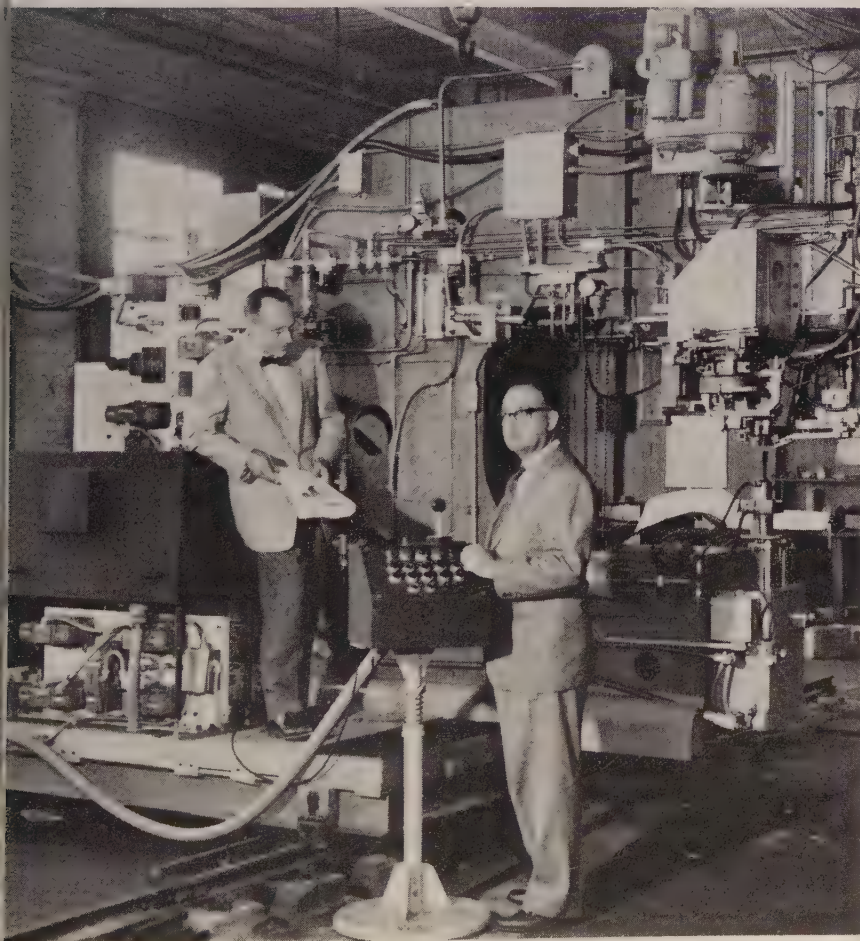
Location — The small detector, called a Vibraswitch, is mounted on the side of the compressor. When functioning is abnormal, the device detects vibration increases and triggers a shutoff.

Mr. Swann says the device has worked five times. The shutoff saved the compressor from serious damage and prolonged production shutdowns.

Three stoppages were caused by loose or broken screws. In one case, a bearing cap bolt was broken. Finally, the valve lifter broke on the high pressure side of the compressor.

Vibraswitch is made by the Aeronautical & Instrument Div., Robertshaw-Fulton Controls Co., Anaheim, Calif.

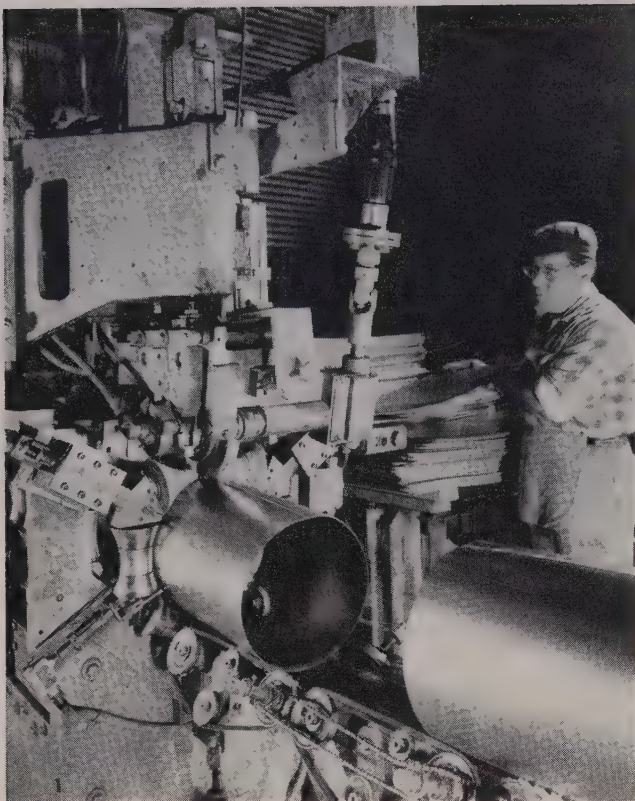
Use of the detector is not limited to air compressors. There's a model for virtually every plant situation. Several thousand installations are already in service.



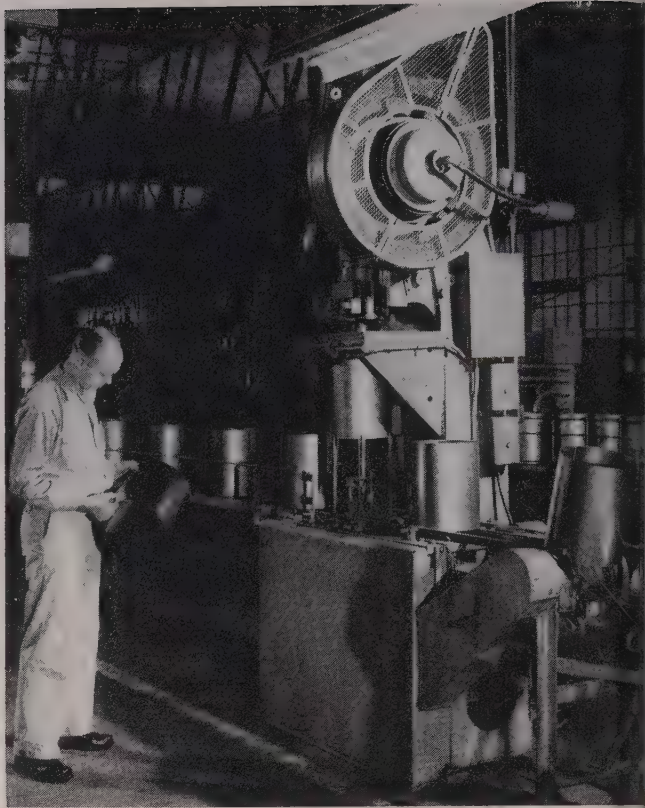
NUMERICALLY CONTROLLED RIVETER section for B-52 wings locates and positions thousands of holes within 0.01 in., drills and countersinks, senses skin thickness, measures and cuts frozen aluminum alloy rivet slug to size, flattens top of positioned rivet, and shaves off excess metal. General Riveters Inc., Buffalo, made it for Boeing Airplane Co. Unique feature: Machine moves over work

CORRECTION

IN STEEL's "Guide to Tool Steels & Carbides," (Apr. 21) please add the following to the Ceramic Cutting Tool Table on Page S-5: Metallurgical Products Dept., General Electric Co., 11147 E. Eight Mile Rd., Detroit 32, Mich., producer of 0-30 cemented oxide tools. Delete listing No. 22 (Disston Div., H. K. Porter Company Inc.) on Pages S-20 and 21.



Steel sheets are hand fed into the first machine where they are rolled to shape and lapwelded



Expanding dies in the sizing machine assure that the containers have exact form

Pails Are Stretched to Shape

Automatic sizing machine insures roundness. Cold working action stress relieves the containers and minimizes wrinkles along welded seams. Production cycle is described

TRIPLE benefits stem from the use of an automatic sizing machine in the production of petroleum, paint, and chemical pails at United States Steel Products, Alameda, Calif. The containers are perfectly round, and the cold working stress relieves them and minimizes wrinkles along welded seams.

The body sizer shapes 5-gallon pails. Its 12 expanding die segments can enlarge their diameter as much as $\frac{1}{8}$ in.

Initial Forming—Steel sheets are sheared to size and deburred with an edge grinder. They are hand fed to a two-strand chain conveyor

system which automatically moves the container bodies down the production line.

The blanks are rolled into cylinders and lapwelded in one operation. After sizing, a spinning head with four curling rolls and an expanding die forms a swedge or concave bead around the top of each pail. It strengthens the container and helps it resist distortion at its open end.

Finishing Operations—A "neck in and flange" machine reduces bottom diameters so the pails can be securely stacked for shipment. This operation forms a bottom flange through the use of an internal ex-

panding, external compression die. Twin pneumatic dies punch holes on opposite sides of each pail body to permit attachment of "ears" which will hold the handle.

The bottoms are double-seamed into the bodies after liquid adhesive has been applied to prevent leakage. A machine with grooved rollers does this cold spinning operation.

After a riveting machine secures the "ears," the pails are air tested for leaks and passed through an infrared oven which dries all surfaces.

An automatic paint spraying unit applies protective coatings of lining materials internally while the external surfaces are color finished. The finishes are baked.

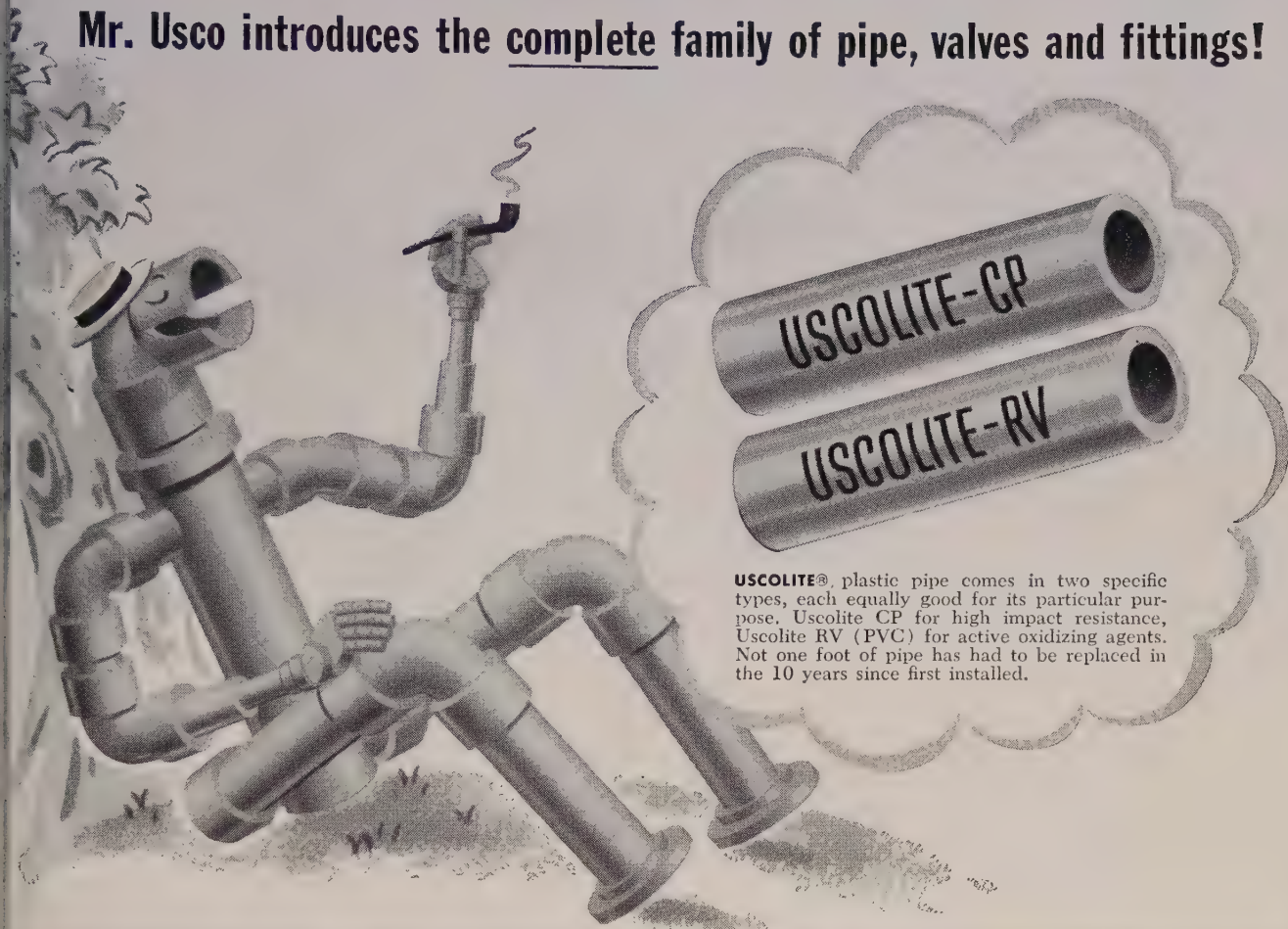
After a final inspection of the bodies, covers and handles are attached, and the pails are packaged for shipment.



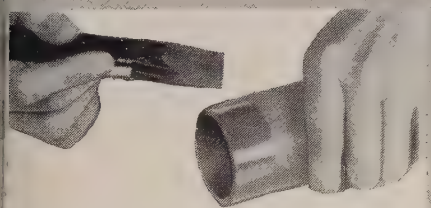
USCOLITE PLASTIC PIPE

PIPE DREAMS come true!

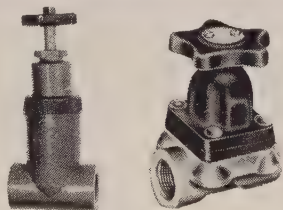
Mr. Usco introduces the complete family of pipe, valves and fittings!



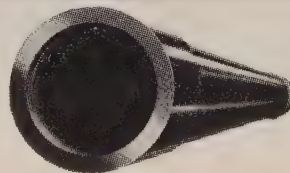
USCOLITE®, plastic pipe comes in two specific types, each equally good for its particular purpose. Uscolite CP for high impact resistance, Uscolite RV (PVC) for active oxidizing agents. Not one foot of pipe has had to be replaced in the 10 years since first installed.



USCOWELD* Fittings are the only solvent-weld fittings with an interference fit. Greater joint strength, faster insertion. Non-porous, leak-proof. Made of either Uscolite CP or RV materials.



USCO® VALVES offer a choice of either Hills-McCanna diaphragm valve or Vanton "Flex-Plug" gate valve.



USCOFLOW is a new, black utility pipe, especially suited where low first costs are a factor. It is a blend of styrene-base resin and synthetic rubber for good impact resistance and high tensile strength.

The "Usco" Plastic Pipe Line of precision-molded pipe and fittings for every corrosion and flow problem includes elbows, tees, couplings, flanges, reducing bushings, plugs, caps, nipples, bends.

When you think of plastic, think of your "U.S." Distributor. He's your best on-the-spot source of technical aid, quick delivery and quality plastic pipe and fittings.

* Patent applied for

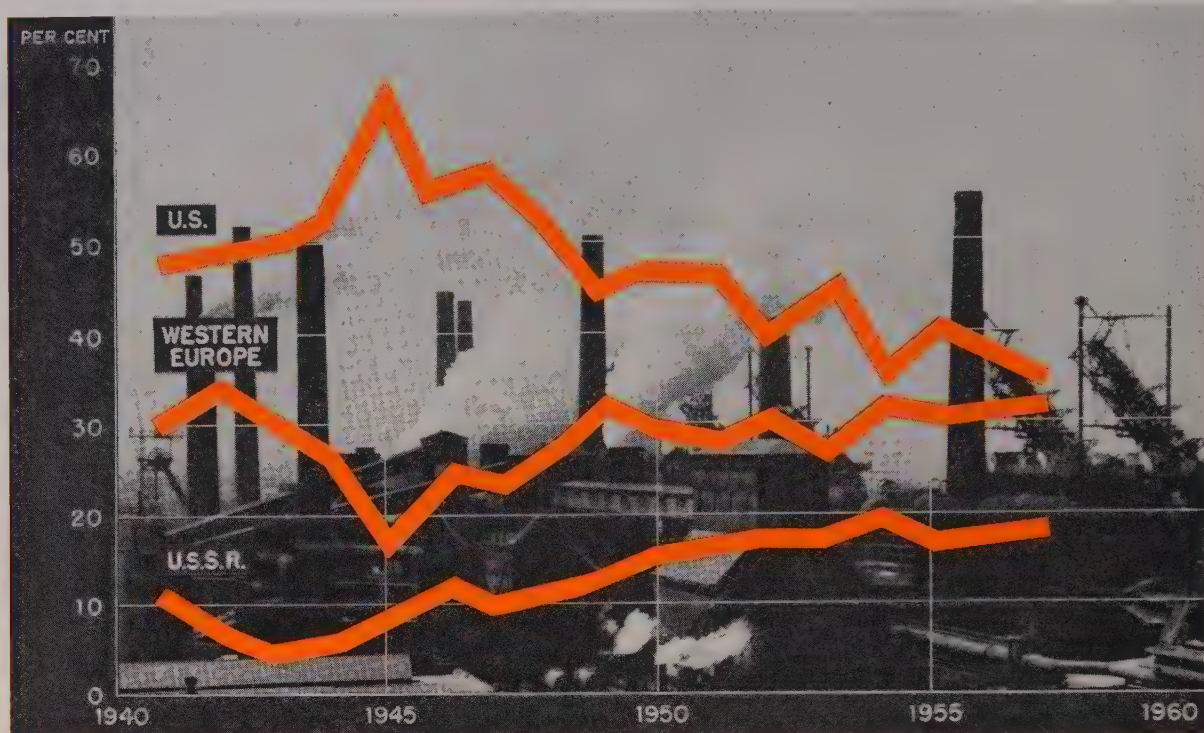
Mechanical Goods Division

United States Rubber

Rockefeller Center, New York 20, N. Y.

In Canada: Dominion Rubber Company, Ltd.

World Production of Steel Ingots and Castings



Balance of Steel Power Shifts

America's dominant steelmaking position is slipping, while Russia and Europe are coming up fast. A research director points out some of the areas to watch

WESTERN EUROPE is well on the way to doubling its prewar steelmaking capacity. By 1960, it will be 122 million net tons a year. No doubt about it, the world steel-making position of the U. S. is declining steadily.

When we entered World War II, we were making half the world's steel ingots and castings. Western Europe accounted for 30 per cent, Russia 10 per cent. Western Europe's contribution is still about the same, but we have slid back to 35 per cent. Russia has climbed to 20 per cent.

At the rate Russia is climbing—from 9 million tons in 1943 to 56 million tons in 1957, she will soon be able to challenge the U. S. as the dominant steel producing nation.

The warning was voiced by Dr. D. L. McBride, director, metallurgical process development, applied research, U. S. Steel Corp., at a recent SAE meeting.

Behind the Growth—Dr. McBride asks: How have Western Europe and Russia been able to boost their steel production by over 152 million tons since 1944, while

our capacity has gone up only 50 million?

Certainly, the nations have done some things in common. Part of their increases came through new plants and equipment. Ores are being beneficiated, furnaces enlarged and material handling improved. Changes are being made in refractories and in combustion practices.

Europeans are doing still more. They're using self-fluxing sinter in blast furnaces, operating blast furnaces with a second ring of tuyeres at the bosh level, processing low grade ores unsuitable for direct use in the blast furnace by direct reduction (the Krupp-Renn process), and partially reducing high grade ores in the Wiberg furnace. They're desiliconizing and desulfurizing hot metal, using oxygen



Tons of Cast Steel Against The Sea

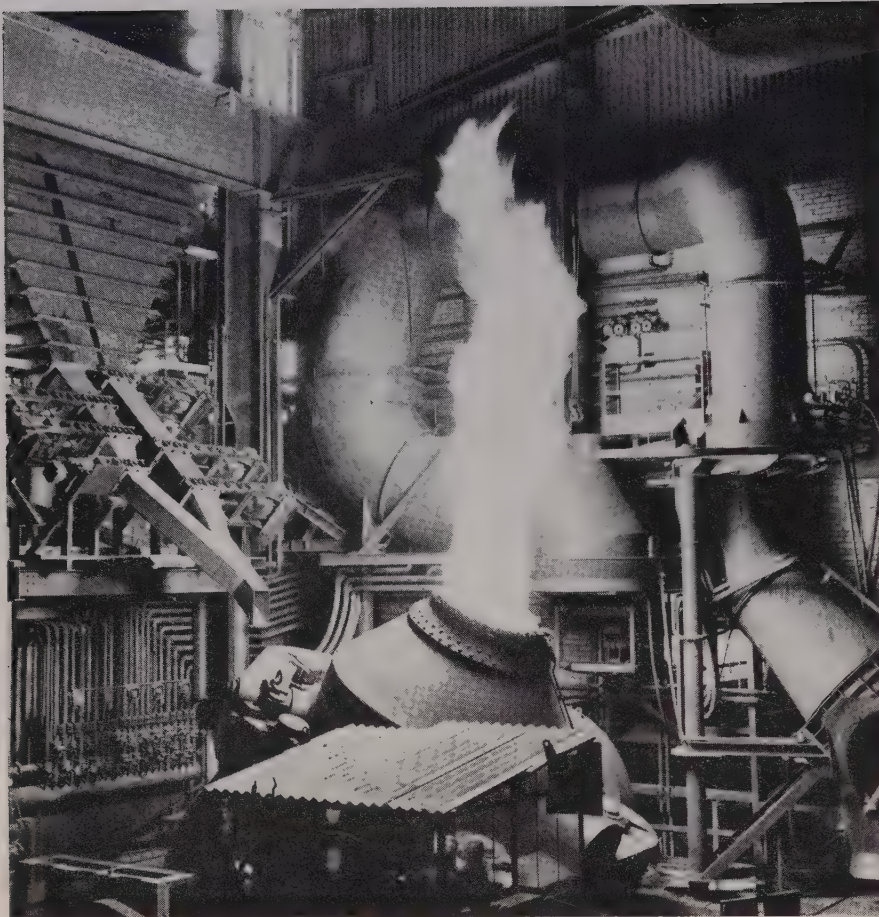
ERIE FORGE & STEEL cast steel ship's stern
es meet and beat the stern challenges of the
n seas . . . steel castings bred and born to
ive Neptune's furious tempers against mari-
and naval shipping. Like the men who for
uries have mastered the sea, these cast
components boast the rugged strength, the
rn quality to win the coveted "well done"
very voyage.

Casting and forging dependable ship's com-
ponents and vital parts for industrial machines is
a long-time habit at Erie Forge & Steel. A habit
combining strict quality control from raw materi-
als to finished casting, long experience in produc-
ing steel castings to exacting specifications, mod-
ern metallurgical, engineering and production
methods . . . Procedures that assure the results
you expect. Consult with us.

ERIE FORGE & STEEL CORPORATION

ERIE, PENNSYLVANIA

MEMBER AMERICAN IRON AND STEEL INSTITUTE



Kaldo rotating oxygen converter at the Stora Kopparbergs Berslags A/B works in Sweden, one of the newer European developments

PROGRESS . . .

roof jets in open hearth furnaces, and continuously casting steel. They are making wide use of basic refractories for open hearth roofs, walls, and checkers.

Oxygen—Virtually every integrated steelworks in Western Europe has facilities for producing high purity oxygen in large quantities at low cost. The British Oxygen Co. Ltd. is even supplying oxygen through grid systems to all steel plants in the Scunthorpe and Sheffield areas in England.

Because of the demand for peak production of steel in Russia and the need for lower nitrogen steels for flat-rolled products in Western Europe, those areas are probably farther advanced than the U. S. in the wide scale use of oxygen, Dr. McBride believes.

Low Shaft Furnace—In Western Europe, the severe shortage of coking coals has stimulated work on the low-shaft blast furnace. The basic idea of the low shaft is the simultaneous carbonization of high

volatile, noncoking bituminous coal and the reduction of briquets made of a mixture of coal, iron ore fines, and fluxes.

A conventional high-shaft blast furnace needs a coke plant, a sintering plant, and a gas cleaning plant. For a low-shaft blast furnace, the briquetting plant is expected to replace both coke plant and sintering plant. The furnace would be lower, but it may need a gas cleaning and tar condensation plant.

Longer Hearths—The relative proportions of the experimental low-shaft furnaces are similar to those of conventional high-shaft furnaces. (In a modern American blast furnace the ratio of working height to hearth diameter is about 3 to 1.) Research workers are hoping to enlarge the hearth area without making the furnace higher by using an oval or rectangular hearth.

For reasons of blast penetration, the narrow side of the hearth may be limited to 7 ft, but the broad side might be enlarged to 18 ft, giving a hearth area of up to 125 sq ft.

Pilot Furnace—A low-shaft furnace under construction at Troisdorf is expected to produce about 110 to 130 net tons of pig iron per day when using briquets prepared from low grade ores and non-coking, high volatile coal. In contrast, a high shaft furnace of the same hearth area could produce 300 to 350 net tons per day when burdened with quality coke and beneficiated high grade ores, but such a small conventional blast furnace is now considered obsolete and uneconomical.

Until the maximum capacity for the low-shaft blast furnace is established, its future will remain in doubt. It depends on its ability to smelt small quantities of pig iron from local low grade ores and non-coking coals at a lower investment and operating cost than a modern high-shaft furnace can when operated with a beneficiated burden.

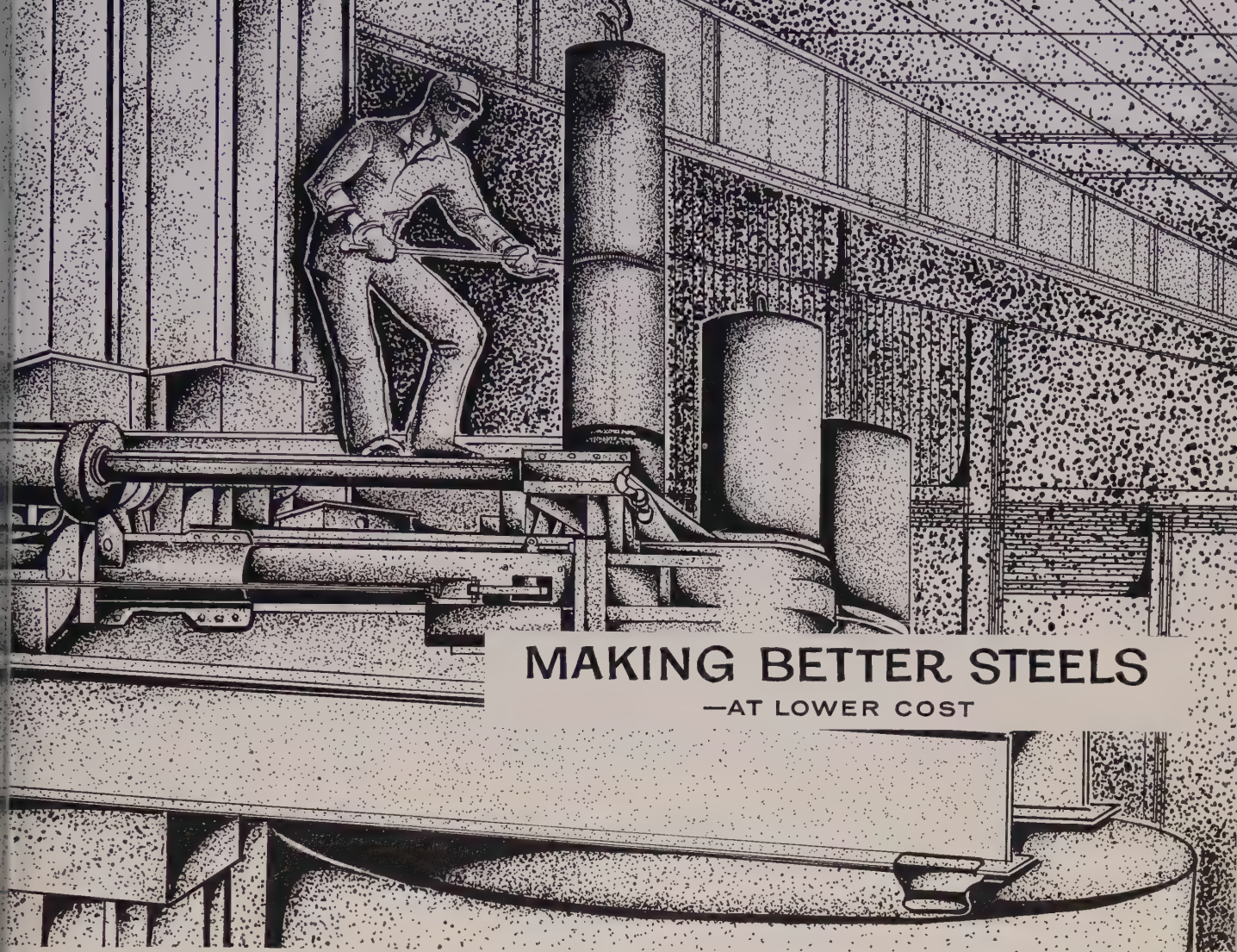
Electric Smelting—In countries which have little metallurgical coke but abundant low cost electric power, electric smelting furnaces are an economical substitute for the blast furnace. They use only half as much coke as the ordinary blast furnaces but require about 2000 kw-hr per ton of pig iron.

Electric smelting furnaces have been operated in Norway, Sweden, Italy, and South America. Probably the largest installation is a plant in Norway with three 18,000 kw furnaces which, in total, should produce about 600 to 650 tons per day, or less than half as much as one large, modern blast furnace.

High Phos Ore—Many European iron ores contain roughly ten times more phosphorus than the North American ores, and pig iron smelted from them will contain 1.5 to 2.0 per cent phosphorus. Much European steelmaking capacity has to be designed to make low phosphorus steels from high phosphorus pig irons.

The Thomas (basic) pneumatic process has become the dominant European steelmaking process for treating this kind of iron. It accounts for about one-half of the steel produced in Western Europe.

Better Thomas Steel—The high nitrogen content of Thomas steel makes them inadequate for some applications because of their higher



MAKING BETTER STEELS

—AT LOWER COST

ADDING

... to the electrode column combines the melter's art and science of knowing how and doing it right.

The joints of a **GLC graphite electrode column** are made tighter by using the "weld-strength" **Unitrode® nipple**—a revolutionary new aid to making better steels at lower cost.

FREE—This illustration of one of the skills employed by the men who make the metals has been handsomely reproduced with no advertising text. We will be pleased to send you one of these reproductions with our compliments. Simply write to Dept. S-5.

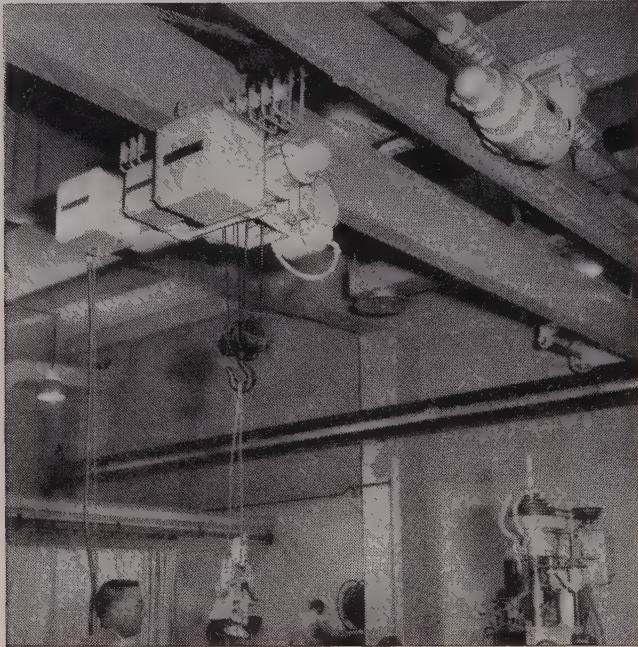


GREAT LAKES CARBON CORPORATION

18 EAST 48TH STREET, NEW YORK 17, N.Y. OFFICES IN PRINCIPAL CITIES

SHEPARD NILES**HOISTS**

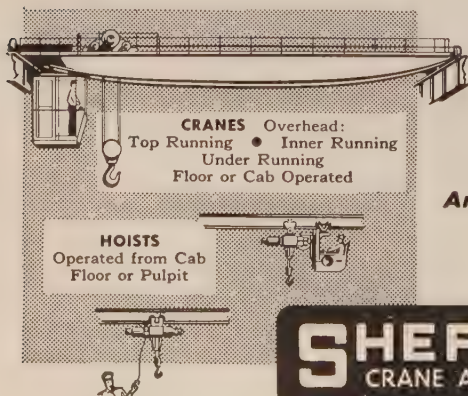
YEARS of SERVICE WITH TROUBLE-FREE PERFORMANCE



You can be certain of years of thrifty, dependable service when you invest in a Shepard Niles hoist. Long after you have written off the original cost, your Shepard Niles hoist will still be speeding raw materials and work-in-process through the air.

Choose from medium and heavy duty capacities with slow, medium or fast speeds . . . built for cycle duty, heavy intermittent duty, medium duty and light occasional service . . . available with short to long lifts, standard or close headroom, manual or magnetic controls.

Send for illustrated Hoist bulletin today . . . or ask that a Shepard Niles representative call—there's NO OBLIGATION.



Building
America's Most Complete Line
of Cranes and Hoists
Since 1903

SHEPARD NILES

CRANE AND HOIST CORPORATION

2393 Schuyler Ave., Montour Falls, N. Y.

PROGRESS . . .

strength, lower ductility, and susceptibility to strain aging. Many attempts have been made to reduce the nitrogen content by:

1. Working the blow at a low temperature.
2. Using a shallow bath.
3. Lowering the nitrogen content of the blowing gases (especially during the latter part of the blow) by using an oxygen enriched mixture, mixtures of steam and oxygen, or mixtures of oxygen and CO₂.

High O₂ Blast—More oxygen in the blast increases the scrap melting capacity of the Thomas converter. This permits expansion of steelmaking capacity without adding new pig iron and coke oven facilities.

With straight air blowing, the Thomas charge is about 4 per cent scrap and 96 per cent pig iron, making a steel which averages 0.012 per cent nitrogen. Enriching the blast to 30-32 per cent oxygen makes a 16 per cent scrap charge possible, and the nitrogen content of the steel drops to 0.006 per cent.

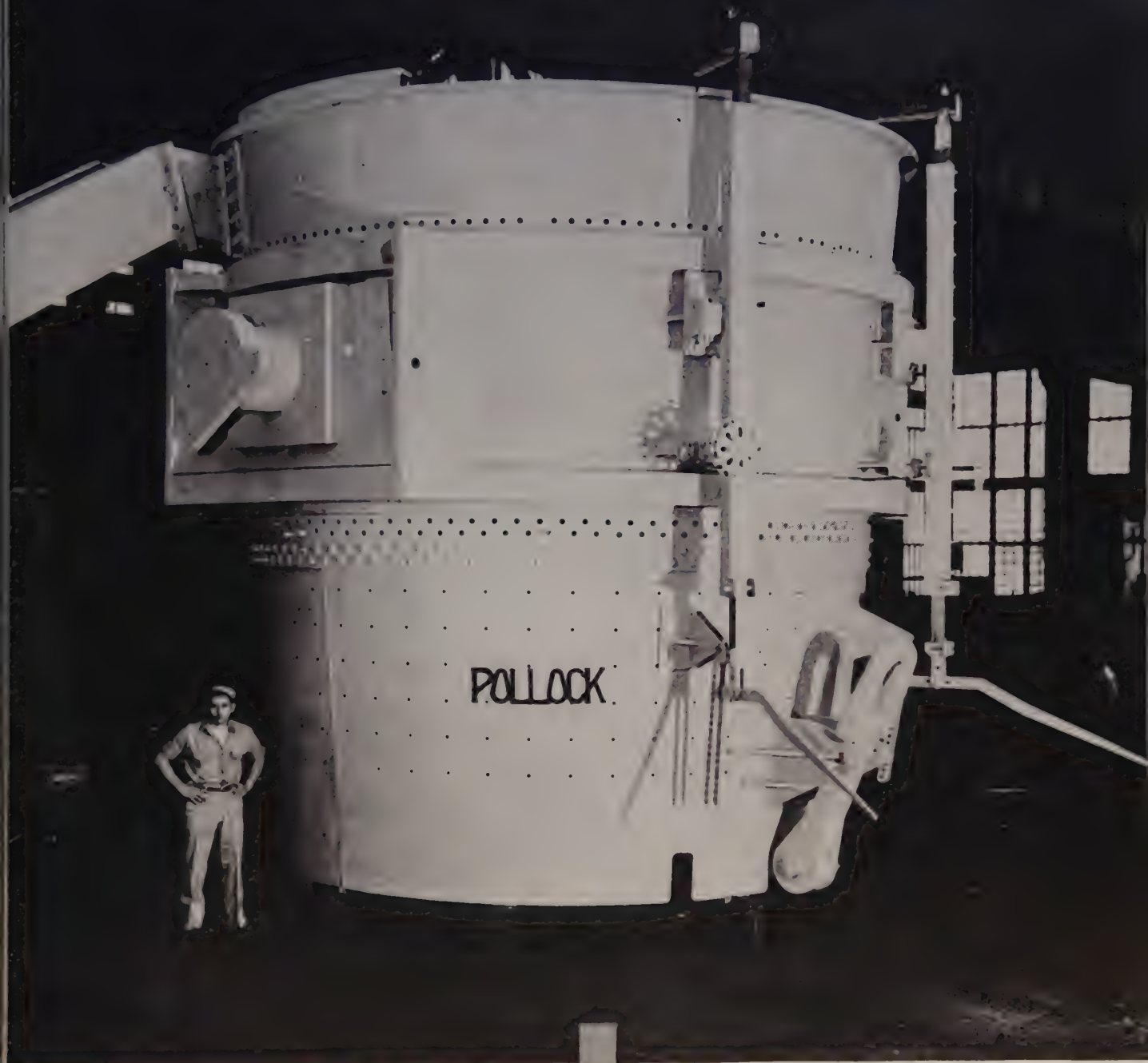
Today, 15 million to 20 million tons annually, or about one-half the Thomas steel produced in Western Europe, are being blown with an oxygen enriched blast. All of the 11 Thomas steel plants in Western Germany are using it.

High Production—Another advantage of oxygen enriched blast is shorter blowing time. This raises the potential output of the converter, but makes it necessary to use a coolant to prevent fast erosion of the lining. Steel scrap can be used as a coolant, but steam and carbon dioxide are effective.

If the conventional air blast, with its objectionable nitrogen content, were replaced completely by a properly balanced steam/oxygen blast or a CO₂/oxygen blast, the nitrogen content of Thomas steel would be no higher than that of basic open hearth steels. The CO₂/oxygen process is not being used on an industrial scale, but experiments have demonstrated its value. Superheated steam is available in every steel plant, and the cost of generating it is considerably lower than the cost of producing either carbon dioxide or high purity oxygen.

Top-Blown Converter—Everyone has been watching the top-blown

LARGEST OPEN HEARTH LADLE in the world today-385 TON PAYLOAD



This big open hearth ladle is so large it must be shipped in three sections. It weighs 175,000 pounds without refractory lining—stands 17 feet, 3½ inches high—is 19 feet at trunnion centers. Most important—IT HAS AN INITIAL CAPACITY OF 385 TONS! The ladle was electrically welded, completely shop-assembled and stress-relieved prior to shipment.

Other ladles, and ten others like it, go to a new open hearth plant. They represent the advanced engineering and fabricating services furnished by The William B. Pollock Company. When you plan increased capacity at your plant, consult the Pollock engineers. They'll help you develop practical solutions.

POLLOCK
Since 1863

The William B. Pollock Co.
YOUNGSTOWN, OHIO

Engineers • Fabricators • Erectors
Steel Plate Construction

BLAST FURNACES • HOT METAL CARS AND LADLES
GINDER AND SLAG CARS • INGOT MOULD CARS
CHARGING BOX CARS • WELDED OPEN HEARTH LADLES



HARPER®

PROGRESS . . .

oxygen steelmaking method, first put into commercial operation in late 1952 by steel plants at Linz and Donawitz, Austria. World capacity of this oxygen process in operation or under construction now amounts to 16 million to 17 million tons annually.

With any of the oxygen processes, temperatures in the zone where oxygen strikes the bath may be sufficient to volatilize iron. The resulting iron loss may amount to as much as 1 per cent of the weight of the charged metal. The volatilized iron rapidly oxidizes and appears as a dense brown fume that has to be removed from the exhaust gases.

Kaldo Process—The Domnarvet Steel Works of the Stora Kopparbergs Berslags A/B, Sweden, has been doing pilot plant work on an oxygen process, using a tilted, rotating vessel in which the oxygen is introduced into the atmosphere above the bath. This is the Kaldo rotary oxygen steelmaking process.

It will be the basis for a new steel plant at Oxelosund, Sweden. The plant will have two 80-ton rotating furnaces and should produce about 500,000 tons of ingots annually for rolling into high grade plate.

The pear-shaped Kaldo vessel is tilted about 15 to 20 degrees from the horizontal while operating, and it may be rotated in this position at 30 rpm. A single opening serves for charging and discharging of the metal, for introducing the oxygen, and as an outlet for waste gases.

Kaldo Advantages—The rate of oxygen input and speed of rotation can be regulated separately and give the operator a way to control agitation of the slag and metal and the relative rates of elimination of carbon and phosphorus. This is especially important: To become commercially important in European steelmaking, the Kaldo furnace must be superior to the Thomas converter for processing high phosphorus (2 per cent) pig iron into low phosphorus steels for flat-rolled products.

Phosphorus elimination in the Thomas converter does not occur until after nearly complete elimination of carbon; in the Kaldo furnace, phosphorus is eliminated si-

Pouring silicon bronze at
The H. M. Harper Company,
Metals Division

PROGRESS . . .

ultaneously with the carbon.
More Oxygen—The amount of oxygen going into a Kaldo furnace can be varied within wide limits, depending on the amount of iron ore and limestone added to the charge. Although oxygen consumption is higher for the Kaldo process than for the top-blown oxygen method, this may not be economically unfavorable since the Kaldo process can use oxygen of lower purity (97 per cent) without the need for picking up nitrogen.

This should have a favorable effect on the economics of the process.

Kiln Type—The Oberhausen rotary furnace uses the same rotary principle as the Kaldo furnace except that the speed of rotation is much slower ($1\frac{1}{2}$ to 2 rpm). It has the appearance of a rotary kiln, the furnace being charged and tapped at opposite ends. A distinct feature of the process is the use of two oxygen lances, one of which is immersed in the metal bath and injects high purity oxygen, while the other blows low purity oxygen (as low as 45 per cent) above the bath for burning the CO evolved by the bath reactions.

Larger amounts of iron ore, limestone, or steel scrap can be processed in the Oberhausen furnace than in the Thomas converter. De-phosphorization and decarburization go on together, and when using only a single-slag practice, steels containing as low as 0.07 to 0.08 per cent phosphorus and 0.003 to 0.004 per cent nitrogen can be made from high phosphorus Thomas pig iron. Double-slag practice would lead to steels with a substantially lower phosphorus content, presumably even as low as European basic open-hearth steels.

A 60 and a 100 ton furnace are operating at Oberhausen. They have a total annual capacity of 30,000 tons of steel. Two Oberhausen rotary furnaces, each with a capacity of 100 tons, are being installed in a plant in South Africa to produce 1,080,000 tons annually.

An extra copy of this article is available until supply is exhausted. Write Editorial Service, STEEL, Penton Bldg., Cleveland 13, Ohio.



HARPER®

Corrosion-resistance starts here



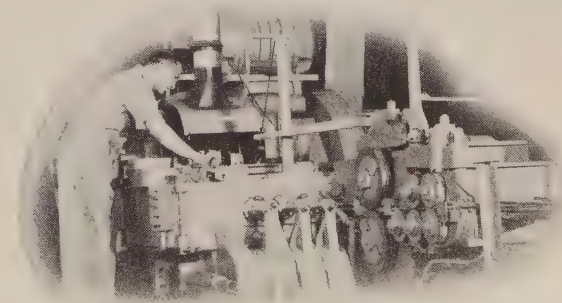
RESPONSIBILITY... from molten metal to finished fastening

At Harper's, under one roof, is more knowledge of corrosion-resistant fastenings than anywhere else on earth.

We alloy our own corrosion-resistant metals in our Metals Division. Brass, silicon bronze, naval bronze, aluminum bronze, stainless steels, and other Harper metals are melted and poured into ingots, extruded into bar and rod, and drawn into wire. Then in our Bolt Division they are cold or hot forged into bolts, nuts, screws, rivets, and washers (special parts, too).

Harper's knowledge of the corrosion-resistant fastening business—gained from our 35 years of leadership in this field—assures you of the finest fastenings for any service whatsoever. From tiny screws used in an electronically guided missile—to heavy, high-heat-resisting bolts used in a chemical plant—there is one responsibility, one quality standard, and complete assurance of satisfactory service.

Coupled with immediate availability of thousands upon thousands of standard Harper Corrosion-Resistant Fastenings from your nearby Harper Distributor—who adds more years of specific fastening experience—you are as near as your telephone to the world's finest corrosion-resistant fastenings.



Operator observes .734" wire being headed into finished bolts

THE H. M. HARPER COMPANY
 8200 LEHIGH AVENUE • MORTON GROVE, ILLINOIS

Barriers to Faster Cutting

A report at the ASTE show highlights what we need to work at tomorrow's machining speeds. A survey of 1500 executives cites numerical control problems

WE have a number of problems to solve before we can machine at superspeeds.

Six of them were brought up at the ASTE show in Philadelphia last Saturday in a talk by Norman Zlatin, who is a partner in Metcut Research Associates, Cincinnati:

1. Cutting tools are needed that can withstand higher tool temperatures that go with higher speeds. Temperatures above 1400° F will be common—ceramic tools are a step in the right direction.

2. As the speed goes up, rotating parts of the machine will have to be perfectly balanced. Any unbalance results in vibrations that are "disastrous" to tool life.

3. Machines will need more horsepower. As the rate of metal removal increases, horsepower requirements climb in almost direct proportion.

4. We'll need new types of cutting fluids, with the emphasis on cooling (more heat absorbing capacity than present fluids have). A possible answer: A cutting fluid containing solid particles that absorb heat as they melt and resolidify in the machine reservoir.

5. Higher cutting speeds mean that chips will be coming off faster. Machines will have to be equipped with mechanically operated units to remove the chips from the vicinity of the cutting tool.

6. With faster cutting, machining time becomes a less important part of the production cycle. To keep it in perspective, better methods will be needed for loading, unloading, and tool changing.

The Trouble with Tape

Industry has plenty of interest in numerically controlled machine tools but too little knowledge about

them. That's the conclusion of a study by ASTE.

Results show that most top tool engineers are not thinking about numerical control in terms of: "Is this or that equipment applicable to our operation? What will it cost?"

In many cases, respondents indicate they are not familiar with the systems used, how they operate, or exactly what equipment is available.

The Big Ones—A second conclusion is that larger plants (employing 10,000 or more) have done more pioneering in numerical control than smaller plants.

The high cost of experimentation largely explains the difference. Aircraft manufacturers are the biggest users.

Best Potential—Tool engineers believe that drilling is the process most adaptable to programmed controls, regardless of plant size.

Respondents who already had tape or punched card controlled equipment in their plants listed jig borers, milling machines, and riveters most often.

Savings in direct labor seem to be the most important single factor influencing adoption of numerical control. Next in importance are savings in machine time, improved accuracy, and reduction in equipment required.

The study disclosed that the controls will be most widely used where production runs are short. Respondents often referred to less leadtime and lower fixture costs.

Biggest objections: Cost is too high; systems are too complicated and not standardized; and "we need to know more about them." "Anything that can be done to obviate these difficulties will hasten the adoption of such equipment in our plant," was the conclusion of most respondents.

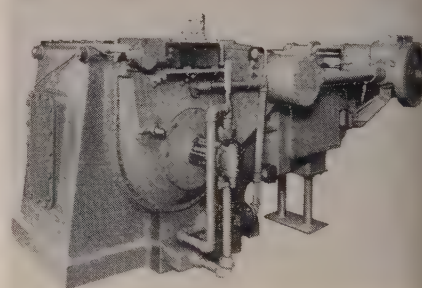
Supercooling Pump

Device helps cool tanks and processes more efficiently. By-product is useful power

INCREASING demand for liquid gases used in missiles and such processes as welding and heat treating underscore the need for more efficient pumping machines.

One of the latest is a reciprocating expansion engine which has a thermal efficiency of up to 85 per cent. Used with a rectifying column, it can develop temperatures down to minus 300° F. Useful power is a byproduct.

Efficiency—To get temperatures under minus 100° F, you can extend the range of commercial refrigeration units by using two or more liquids in series. But it's more practical to expand the compressed gas through a throttle valve, or an expansion engine.



PUMP

... makes cooling more efficient

The expansion engine is more efficient, say the makers, Cooper Bessemer Corp., Mt. Vernon, Ohio. The same pressure that gives you minus 85° F through a throttle valve produces minus 260° F through a reciprocating expansion engine.

Heat Exchanger—Cooling cycles which use expansion engines also use heat exchange for continuous processes. That way, such engines give efficiencies of 25 per cent, compared with expansion valves which average about 10 per cent under the same conditions.

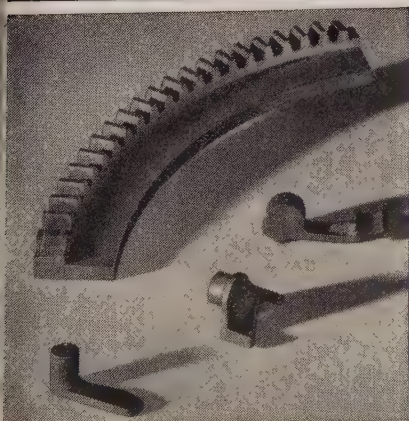
Applications — Expander engines aid refrigeration of large vessels, or they can cool storage tanks to prevent excessive evaporation. Another application is in large rooms used for subzero quenching of aluminum alloys.

Taylor & Company specializes in versatility with **HANNA PIG IRON**

Taylor & Company, Inc., Brooklyn, New York, casts them little and big with equal ease—from dry-sand castings that weigh tons, to light close-tolerance parts cast by the shell-molding process. As many as 6,000 different patterns are used by Taylor in an average month.

For seventy-five years, this merchant foundry has turned out a variety of sizes and shapes with the aid of high-quality Hanna pig iron, especially Hanna Malleable and Hanna Silvery grades. President William Z. Taylor has never failed to find Hanna a dependable source of supply for any analysis he needs to meet his customers' requirements.

Whatever you cast, there's a Hanna iron to do it best. All regular grades of pig iron, plus HannaTite and Hanna Silvery, are available in 38-pound pigs and the smaller HannaTen ingots. For prompt service, call on one of Hanna's trained representatives.



△

This 6-ton dry-sand casting will be a machine tool base that stands up to vibration and shock, provides a rock-steady foundation for accurate work.

◁

These small parts were cast to close tolerances by the shell-molding process, and need little or no machining.

THE HANNA FURNACE CORPORATION
Buffalo • Detroit • New York • Philadelphia
Merchant Pig Iron Division of

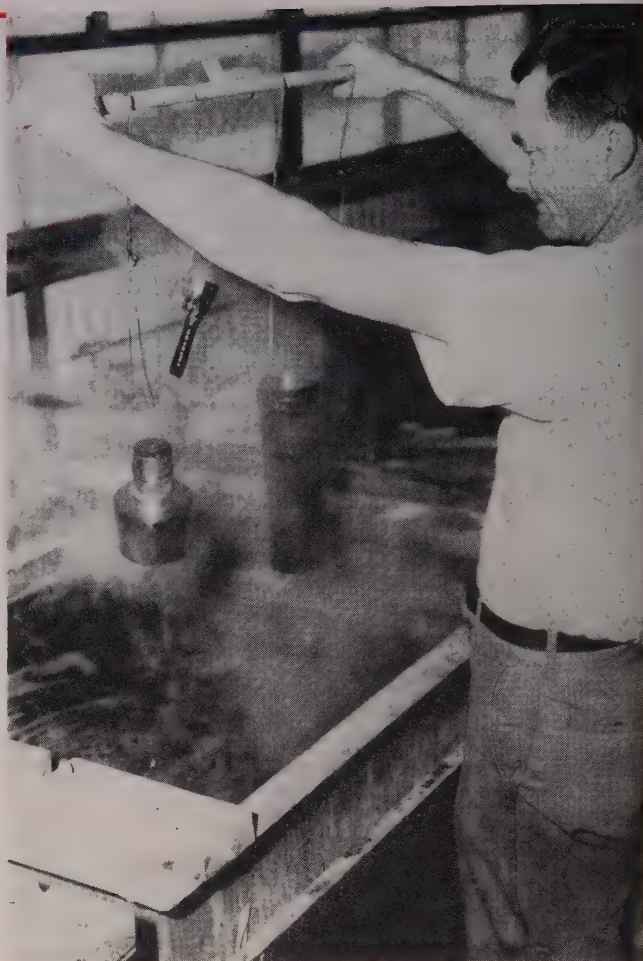
NATIONAL STEEL CORPORATION



Testing Plating on Titanium

Apply a 2000-kg load to specimen with a $\frac{1}{8}$ -in. hardened steel ball in a Brinell type machine. The quality of adhesion is judged by magnifying the fracture ten times and using this rating scale:

Rating	Appearance of Fracture
POOR	Clean break at interface, with no plate shear.
FAIR	Some plate shear; little or no residual plating in "bare" area.
GOOD	Better plate shear; more residual plating in "bare" area.
EXCELLENT	1. No fracture under 2000-kg load. 2. Extensive tapered plate shear with many plated spots in "bare" area.



Chemical reduction methods are used to plate missile parts at the Downey, Calif., plant of North American Aviation

Plating Helps Titanium

Chromium plating, for example, overcomes galling and seizing tendencies. Copper and nickel are used as undercoatings. Missilemakers use electrical and electroless methods

PLATING covers up some of titanium's shortcomings.

- Galling and seizing tendencies can be eliminated by chromium plating.
- Solderability and electrical conductivity can be improved by copper and silver plating.
- Scaling at heat treating and service temperatures above 1000° F can be prevented by nickel plating.

No Cure-All—Plating brings up

two new problems: Oxide films on the metal, which are hard to remove, tend to prevent satisfactory adhesion of coating materials. Titanium has an unpredictable tendency to become embrittled by hydrogen when it's plated.

Aircraft and missile manufacturers are getting around many of the metal's surface limitations by using electrical and electroless plating methods.

Undercoating—Copper and nickel form a good bond with titanium and are recognized as the best materials for undercoating. A thickness of 0.0010 to 0.0020 in. is sufficient to assure adhesion of additional materials.

Nickel is commonly applied by the electroless method, and copper is electroplated. Plate thicknesses of up to 0.020 in. may be specified if they are used alone.

Many manufacturers believe that electroless nickel plating tends to induce hydrogen embrittlement. Engineers at North American Aviation say this can be eliminated by preparing the metal so the hydrogen

ANNOUNCING

THE FIRST

VACUUM CAST
CONTINUOUS

HEAT TREATED
STEEL ABRASIVE
EVER OFFERED!

TURN THE PAGE 



Contamination is minimized by placing tanks close together. Rapid transfer from one solution to another is possible

PLATING . . .

atoms will function as catalytic agents in the electroless solution.

Plating Procedure—Before plating, the metal is mechanically cleaned to remove everything except the oxide film (which reforms immediately).

If necessary, molten paraffin or pressure sensitive plastic tapes are used to mask the plating area. Titanium may be used as a conductive masking medium when it is desirable to prevent edge buildup.

Activation treatments are necessary immediately before the pieces are immersed in the copper or nickel plating bath. A typical treatment is the one used by Lockheed Aircraft's Missile Systems Div. in the processing of 4Mn-4Al and 6Al-4V alloys.

The metal is immersed in a solution of 3 parts 69 per cent nitric acid and 1 part 60 per cent hydrofluoric acid. After the evolution of red fumes, the part is rinsed thoroughly with distilled or deionized water. It is reimmersed in a solution of sodium dichromate, hydrofluoric acid, and distilled or deionized water, for 20 minutes at 180° F to boiling. The treatment is finished by a thorough rinse in

cold running tap water.

Conventional plating baths are used. When two or more plating materials are applied, it is best to transfer the pieces from one processing solution to another as rapidly as possible. It minimizes the possibility of contamination.

Example—Silver is plated on titanium at North American Aviation so missile structural components can conduct current in the 200 to 400 megacycle band. The depth of current flow is 150 to 200 millionths of an inch.

An electroless process is used to deposit 0.0010 in. of nickel for the initial layer. It is covered with a similar deposit of copper to form a base for the 0.0020-in. layer of electroplated silver. Finally, a 0.000050-in. coat of gold is applied to prevent oxidation of the silver.

Testing—Plating is evaluated by exacting physical tests. One of the most reliable is the steel ball indentation test outlined in the box on Page 102.

Copper plating is often checked by simply soldering wire to the specimen, then pulling the wire until fracture. A deposit is considered satisfactory if no titanium is bared at the fracture.

Better Alloy for Jets

An improved high temperature alloy, known as Lapelloy "C" has been developed by Carpenter Steel Co., Reading, Pa., for jet engine parts that require good ductility and impact resistance.

Compared with conventional Lapelloy, its structure has greater homogeneity, and its fabrication behavior and mechanical properties show greater uniformity, says Carpenter Steel. It is designed for highly stressed parts used at temperatures up to 1200° F. Lapelloy "C" has greater ductility and impact strength at both room and elevated temperatures than conventional Lapelloy when heat treated to the same strength level, states Carpenter.

High mechanical properties can be developed by heat treatment. The alloy has good resistance to scaling and oxidation for continuous service up to 1400° F. It has best corrosion resistance in the hardened and tempered condition.

Analysis of Lapelloy "C": Carbon 0.20-0.25 per cent, manganese 0.65-1.0, silicon 0.50 maximum, chromium 11.00-12.00, nickel 0.50 maximum, molybdenum 2.50-3.00, copper 1.75-2.25, nitrogen 0.06-0.10.

Machinability of the alloy in its annealed condition is comparable to that of Type 420 stainless steel. It can be purchased in billets, hot and cold rolled bars, wire, cold rolled strip, and special shapes.

New Alloy on Market

Rene 41, a vacuum-melted alloy for use in the 1200 to 1800° F range, has become commercially available in a variety of forms.

Cannon-Muskegon Corp., Muskegon, Mich., is producing the nickel-base alloy as rolled or polished sheets (up to 48 x 120 in., in thicknesses down to 0.010 in.), wire (including a welding grade), and wrought bar stock.

Tensile strength ranges from 180,000 psi at 1000° F to 40,000 psi at 1800° F. Yield strength at 1000° F is 135,000 psi; at 1800° F, it drops to 35,000 psi.

Other properties: Good resistance to oxidation at temperatures up to 1800° F; good formability and machinability.

**You have never used abrasive
like this new**

ROTOBLAST[®] STEEL SHOT

1 Vacuum Casting

Electric furnace alloy steel, shotted in revolutionary new vacuum chamber for greater density, eliminating the voids and defects encountered in conventional steel shot. Gives you a fatigue resisting shot of much longer wear life.

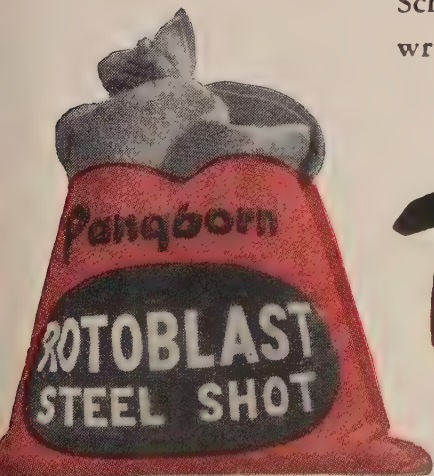
2 Continuous Heat Treating in Controlled Atmosphere

Nothing like it in the industry. Uniform heating of every particle, in zero oxygen atmosphere. For the first time . . . ball bearing heat treating quality in a tonnage product . . . gives you uniform hardness and longer life.

**new Rotoblast Steel Shot gives you much faster cleaning
and the lowest blast cleaning cost ever!**

Schedule an early test! Talk to the Pangborn Engineer in your area or write PANGBORN CORP., 1600 Pangborn Blvd., Hagerstown, Md.

See us at the Foundry Show



Pangborn

Rotoblast Steel Shot

Copper Welding Index

Material	Approx. Analysis, %				Electrical Conductivity	Heat Conductivity	Welding Index
	Cu	Zn	Sn	Others			
Copper	99.9	..	..	...	100	100	H-500
Commercial bronze	95.0	5.0	..	...	55	62	H-200
Commercial bronze	90.0	10.0	..	...	41	48	H-200
Red brass, 85%	85.0	15.0	..	...	37	41	H-200
Red brass, 80%	80.0	20.0	..	...	32	36	G-175
Cartridge brass	70.0	30.0	..	...	28	31	E-150
Eyelet brass	68.0	32.0	..	...	27	31	E-150
Yellow brass	65.0	35.0	..	...	27	31	F-150
Muntz metal	60.0	40.0	..	...	29	33	F-150
Tobin bronze	60.0	39.2	0.8	...	25	30	F-150
Phosphor bronze, A	95.0	..	5.0	...	18	31	D-125
Phosphor bronze, C	92.0	..	8.0	...	13	16	D-125
Phosphor bronze, D	89.5	..	10.5	...	11	13	D-125
Cupro nickel, 20%	80.0	..	..	Ni/20.0	6	9	C-125
Cupro nickel, 10%	85.0	..	..	Ni/15.0	8	12	C-125
Nickel silver, 30%	47.0	23.0	..	Ni/30.0	4	..	C-125
Nickel silver, 18%	65.0	17.0	..	Ni/18.0	6	9	C-125
Nickel silver, 18%	55.0	27.0	..	Ni/18.0	6	..	C-125
Nickel silver, 15%	64.0	21.0	..	Ni/15.0	6	9	C-125
Nickel silver, 10%	65.0	25.0	..	Ni/10.0	8	12	C-125
Manganese bronze	52.0	39.0	0.8	Fe/1.2	25	26	C-125
Silicon bronze, A	95.0	1.5	0.8	Si/3.0	9	9	B-125
Silicon bronze, B	96.0	1.5	0.8	Si/1.5	12	13	B-125
Beryllium copper	97.7	..	..	Be/2.2	20	25	C-150

Source: Chase Brass & Copper Co.

Electrical and heat conductivity are shown as a percentage of pure copper. The letter prefixes in the welding index column express weldability: B indicates alloys which weld almost as easily as mild steel; C through F for increasing difficulty; G is a

class that can be welded but not all results are perfect; alloys in the H class are impractical to weld. The number in the index designates relative secondary electrical current—100 is that used for mild steel. Numbers close to 100 are easier to weld

How To Weld Copper and Its Alloys

Good conductivity makes these metals tough to resistance weld. But you can do it by sticking to sheets 0.020 to 0.060 in. thick and following these rules

By LESTER F. SPENCER
Metallurgist
West Allis, Wis.

PART FOUR

YOU can resistance weld most of the copper base compositions.

But they're difficult to handle. The problems: 1. The metal welds

itself to the electrodes. 2. Power input is too easily dissipated in the base metal. 3. You can only handle sheets 0.20 to 0.60 in. thick. (There are no satisfactory data for greater thicknesses.)

Answers—The author's recommendations are found in the tables accompanying this article. The figures aren't absolute; you may have to deviate from them on different jobs.

You can check the differences in weldability (shown by the welding index numbers) by making some pressure-tight seam welds. They will point up the need for the judicious choice of alloys.

You'll also notice that the welding variables are different from those of mild steel. Coppers require shorter weld time, lower electrode force, higher current, and electrodes which are compatible with the alloy being welded. Adequate surface preparation is a must for uniform results.

Time—The usual "on" range is two to eight cycles. The heat input is dissipated throughout the work without welding it if the power setting requires longer periods.

Shorter times require equipment with high electrical capacity. You also need synchronous control for consistent quality.

Pressure—This value must permit good fusion yet keep distortion and indentation low. Avoid extremely low pressures. They bring on these problems: 1. The electrode sticks to the sheet. That leads to burning, electrode pickup, and too much lost time for redressing. 2. Indentation and weakness are found around the weld spots. (It's particularly true of Muntz metal and alloys which are extremely soft at temperatures near the melting point.) 3. You run into spitting or flashing, sometimes great enough to burn through a spot with explosive violence. (It happens frequently with high zinc alloys.)

Electrode—The electrical conductivity of the alloy dictates this choice. Highly conductive alloys usually require electrodes of low conductivity. (The reverse is also true.) Avoid electrodes with an electrical conductivity lower than 75 per cent I.A.C.S. (International Annealed Copper Standard).

Dome and radius-faced electrodes are easier to clean and align. Strive for uniform contact resistance—it is determined largely by surface cleanliness.

Thin Gages — Electrodes faced with a high resistance material like tungsten or molybdenum are necessary for light stock. A trace of tin is helpful—tinned wire may sometimes be spot or projection welded to other members.

You can butt weld copper without difficulty, but it requires a high

Spotwelding 0.036-in. Sheets

Alloy	Time, Cycles	Pressure, lb	Current, Amperes
Muntz metal	4	400	21,000
High brass	4	400	24,000
Cartridge brass	4	400	25,000
Low brass	6	400	24,000
Red brass	6	400	25,000
Manganese red brass	6	400	22,000
Aluminum brass	4	400	24,000
Silicon brass	6	510	22,000
Silicon bronze	6	400	16,500
Phosphor bronze	6	510	19,500
Nickel aluminum bronze (work hardening)	6	400	21,000
Nickel aluminum bronze (precipitation hardening)	4	510	21,000

R.W.M.A. Class 1 electrodes; 3/16 in. diameter tip, 30 degree approach

Settings for Resistance Welding Silicon Bronze

	Spotwelding	Seamwelding
Primary voltage	220, 440, 550	220, 440, 550
Weld pressure	300 to 1000 lb	300 to 1000 lb
Welding heat	45 to 250 kva	45 to 250 kva
Size of spot	3/16 to 1/4 in.	—
Weld time	1/4 to 1/2 second per spot; 6 to 8 cycles per spot	2 cycles on, 4 cycles off 3 cycles on, 3 cycles off 4 cycles on, 2 cycles off
Interruption per inch	—	11 to 18
Welding speed	—	3 to 4 ft per min
Electrode material	Mallory #3 or Copper	Mallory #3 or Copper

Source: Resistance Welder Manufacturers' Association. (Tables 1, 2)

energy input, a short welding time, and special procedures to take advantage of its limited plastic range.

Joining braided copper connector straps to copper terminals is an excellent example. Electrodes faced with pure molybdenum and cooling water prevent sticking. Strands of the braid can be welded the same way to prevent fraying. Timing periods range from 8 to 40 cycles, depending on size; pressure varies from 100 to 500 lb.

Welding Brass—These alloys require a wide range of procedures. In general, difficulties decrease as zinc content increases.

Alloys low in zinc are highly conductive and require low electrode pressure and fairly high energy in-

put. Alloys high in zinc are less conductive.

Low brass, red brass, or compositions with more than 80 per cent copper are susceptible to electrode sticking. Welds may not be too strong.

The high zinc brass compositions require fairly high energy input, but there is little electrode sticking except with long welding time and high energy inputs.

Hard To Weld—Cartridge brass is somewhat difficult to handle. There is a strong tendency for the weld to blow through (explode) during long welding time, high energy input, and low welding pressures. Tip pickup is objectionable.

Fairly Hard To Weld—Common

COPPER WELDING . . .

high brass is less difficult to weld than cartridge brass, but keep pressure below 400 lb to minimize arcing or blowing through.

Muntz metal is more easily welded. There is little sticking tendency although you should avoid pressures that are less than 400 lb. Adding 1 per cent manganese to red brass markedly improves welding quality and increases weld strength. Even then, it is sensitive to sticking, especially after a coating forms on the electrode face. More time, pressure, and heat increase pickup.

Easy To Weld — Silicon brass gives welders the least trouble. You get top mechanical properties with about 400 lb pressure and six cycle timing. Use high conductivity electrodes with flat, 3/16-in. tips.

Bronzes — Both the silicon and phosphor bronze alloys are easily welded. In spotwelding silicon bronze, use a low energy input, but avoid two to four cycle timing since it can cause shrinkage voids.

Phosphor bronze requires a low energy input, and there is a tendency for electrode sticking and pickup.

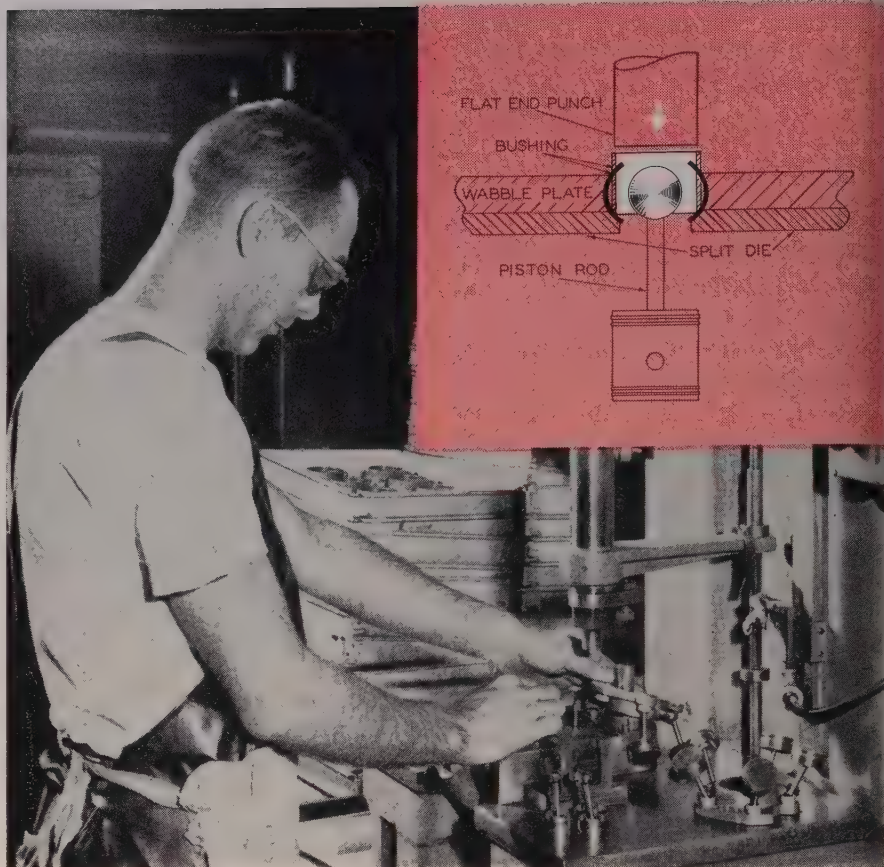
Although those alloys are inherently hot short, the welds are strong but not too ductile. You can expect cracks from slight movements when the metal near the weld zone is heated within the brittle range.

The aluminum bronzes are like the silicon bronzes, but there is a lot of electrode sticking, pickup, and spitting—especially with high pressures. You can avoid that difficulty by using longer time cycles and higher currents and pressure.

Nickel silvers and copper-nickel alloys can be handled without too much difficulty. Just remember to use short time cycles to prevent indentation.

Dissimilar—Copper can be flash-welded to aluminum. It is a tricky combination, but it's becoming competitive with brazing and soldering.

Flash butt welding of 0.036 in. diameter Tobin bronze is another example. Welds have a tensile strength of about 71,000 psi. Ductility is comparable to that of the parent metal.



Assembling the piston rods of a compressor to the wobble plate that actuates them. Inset shows the retaining bushing, before and after pressure is applied.

Press for Precise Assembly

Accurate control of hydraulic pressure permits close tolerance operations at GM's Frigidaire Div. A solenoid valve reverses the ram when pressure reaches 6 tons

A HYDRAULIC press is used by Frigidaire Div. of General Motors Corp., Dayton, Ohio, for precise assembly of piston rods to a wobble plate used in the 5-cylinder compressor for automobile air conditioners.

Wobble Plate—It permits a reciprocating action of the pistons that is parallel to the axis of rotation. Each piston rod has a ground ball that fits into a socket machined in the cast iron plate.

A short sleeve or bushing is fastened in an annular recess formed around each socket. Its bore has a diameter slightly larger than that of the ball.

Assembly—The rod with the piston attached is hand clamped in a split die. The ball is in the axis of the spherical recess, but

it is at a fixed distance above it.

The press operator sets the inverted plate so the ball enters the bore of one of the bushings and is against its spherical seat. An 8-ton Denison hydraulic press forces a flat end punch against the back face of the plate.

Pressure forces the lower end of the bushing into the die recess to produce a socket that locks the ball in place.

A solenoid valve reverses the ram at 6 tons. At this point the bushing forms a close fit without binding. It permits free rocking of the piston rod.

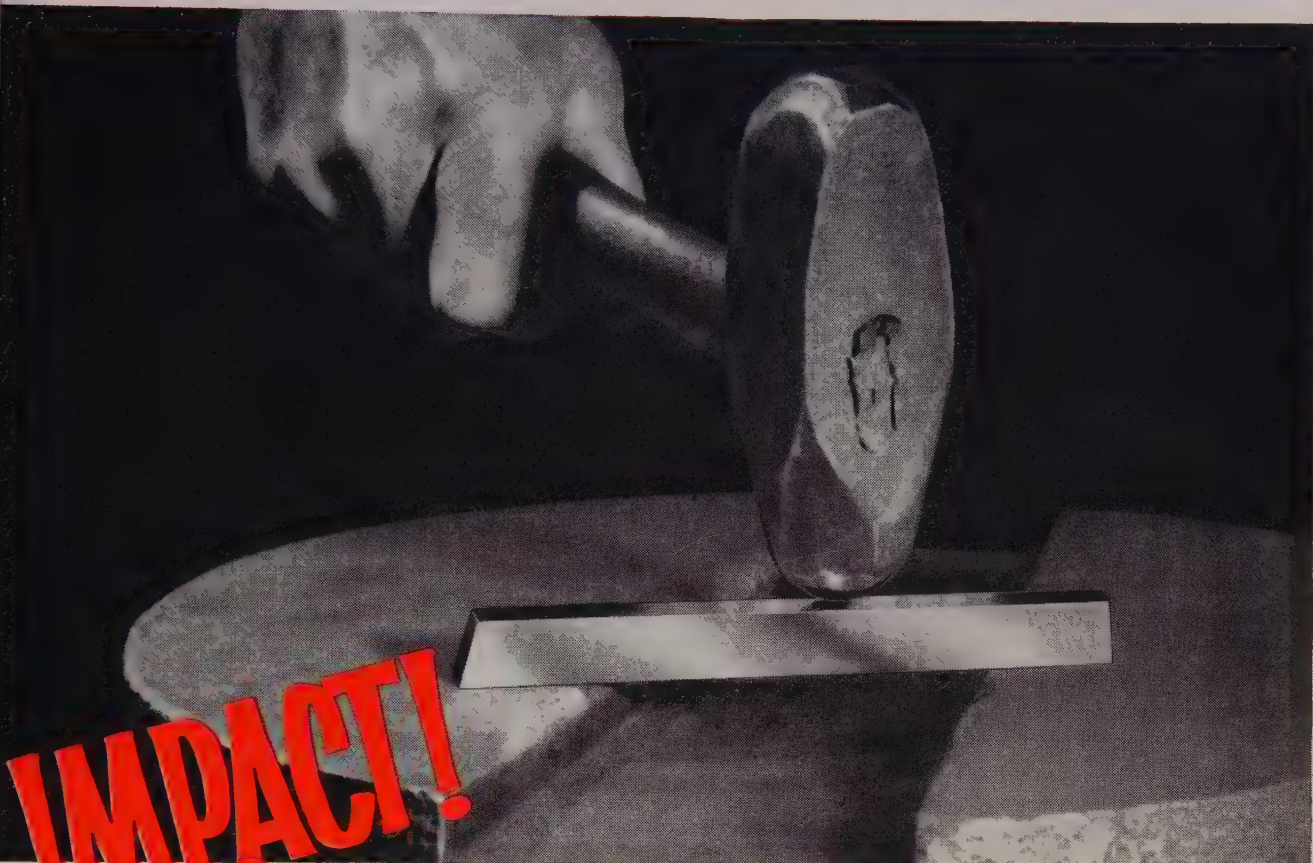
The ram retracts, the operator unlocks the die, releases the rod, and moves next rod into position.

An operator generally does 2000 operation during an 8-hour shift.

• An extra copy of this article is available until supply is exhausted. Write Editorial Service, STEEL, Penton Bldg., Cleveland 13, Ohio.

Firth Sterling ...

PIONEER IN POWDER AND MOLTEN METALLURGY



Only Circle C is quality controlled by impact testing

Every Circle C High Speed tool bit is tested under impact to make sure you get the best bit that can be made. This is the final test in a series of quality control checks made during each stage of production, from Firth Sterling's exclusive double melting process to the finished bit.

Being double melted, Circle C has greater homogeneity that assures toughness and consistent performance, delivers cutting capacity far beyond that of ordinary high speed steels. With Circle C bits you can use higher operating speeds, obtain longer tool life and increase your production. And the practical, well balanced composition gives Circle C unusual red-hardness and wear resistance, provides ONE grade for almost all your machining operations.

Circle C is one of a family of outstanding high speed steels, including Van Chip, Blue Chip and Star-Mo, accepted throughout industry for reducing machining costs today. All are evidence of Firth Sterling's metallurgical leadership—a background of over 68 years of research and development.

* * *

For assistance with your metallurgical problems, powder or molten, simply call your nearest Firth Sterling sales office or distributor. For complete information on High Speed tool bits—and the new Circle C throw away inserts—write for descriptive bulletin TBI-57: FIRTH STERLING, INC., Dept. 81E, 3113 Forbes St., Pittsburgh 30, Pa. Offices and warehouses in principal cities.

Visit our booth at the
A.S.T.E. Show in Philadelphia—Booth 202



PRODUCTS OF **Firth Sterling** METALLURGY

HIGH SPEED STEELS • TOOL & DIE STEELS • STAINLESS SPECIALTIES • HIGH TEMPERATURE ALLOYS
SINTERED TUNGSTEN CARBIDES • HEAVY METAL • CERMETS • CHROMIUM CARBIDES
ZIRCONIUM • TITANIUM • STERVAC & STERCON SUPER ALLOYS





AMERICAN ORIGINALS IN IRON AND STEEL



Iron pots from oyster shells?

It was an anxious community that watched the firing of this country's first successful iron furnace during 1644 at Saugus, Massachusetts. Months of toil and the risk of precious funds were involved.

Not only were many observers awed by the great stone furnace, they were puzzled by the delicate mold fashion by the skilled iron founder, Joseph Jenks. Puzzling, too, must have been the dumping of alternate layers of ore and oyster shells into the flaming blast. "How do they make iron from oyster shells?" many may have asked. Of course, the shells were merely the iron maker's ingenious substitute for the limestone necessary to remove the impurities from the ore.

Excitement mounted like the furnace temperatures as the molten iron was tapped into the waiting mold. Finally, when the mold was broken, a tiny cooking pot was held aloft . . . the first infant product of an infant industry, now grown to be the largest of its kind in the world.

We at The J. E. Baker Company are proud of the part we have played in the further development of the iron and steel industry. For many years, Baker's Magdolite and Jebcolite have provided greater furnace efficiency and more uniform ingots at lower refractory costs. They are always five ways better: in composition, preparation, strength, economy and quality.

ANOTHER AMERICAN ORIGINAL



BAKER'S MAGDOLITE

The original dead-burned dolomite

THE J. E. BAKER COMPANY

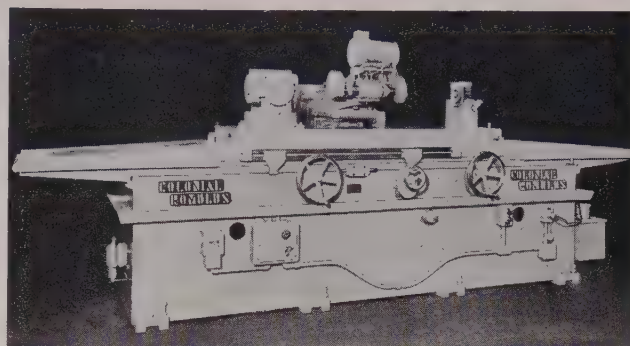
YORK, PENNSYLVANIA • PLANTS: BILLMEYER, YORK, PENNSYLVANIA • MILLERSVILLE, OHIO

Tool and Cutter Grinder Provides Economic Sharpening

A universal tool and cutter grinder designed for the sharpening of large and heavy milling cutter assemblies provides original form and cutting effectiveness.

The universal grinder enables a plant to do its own milling-cutter assembly sharpening with maximum ease and the utmost precision.

The need for carrying expensive cutters as spares or sharpening by a cutter manufacturer is reduced. Accuracy is to 0.001 in. runout of all working surfaces grinding outside diameters up to 18 in. Write: Colonial-Broch & Machine Co., Parkgrove Station, Detroit 5, Mich. Phone: Jefferson 6-2550



Finishing Machine Has Built-in Media Separating System



A barrel finishing machine designed for processing small and medium lots of parts is equipped with a built-in media separating system.

Model DBO-2A has a twin compartment, 5.6 cu ft Neoprene lined barrel and built-in screening drawers to handle discharged loads from each compartment.

Barrel speeds from 8 to 38 rpm add to its ability to perform all types of finishing operations with close tolerances. Quick separation of pieces from the workload saves manhours.

The machine can handle total workloads up to 700 lb, and is ideally suited for limited finishing work, research, job lots, and use as an auxiliary unit. Write: Almco—Queen Products Inc., Albert Lea, Minn. Phone: 3966

Rigid Drilling and Boring Machine Has Vertical Spindle

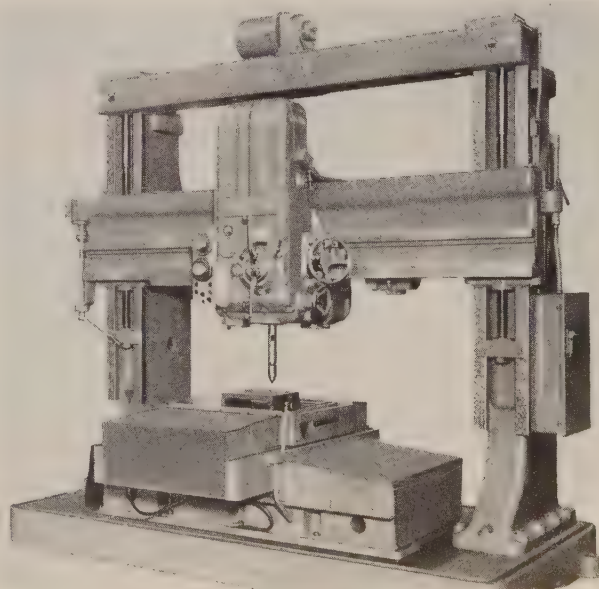
Model 3AR is a double box-column vertical machine produced for heavy duty, vertical drilling and boring operations.

The unit is designed to accommodate tape or hydraulically controlled positioning tables. When so equipped, it will increase hole drilling production by positioning the work faster and eliminating jigs.

It assures precision drilling-boring as well as spacing—made possible by the table and the rigidity of the double box-column construction.

Operating advantages include: Twin screw elevating for the rails, headstock movable to facilitate loading and unloading of positioning table, choice of preselected or manual shift spindle speed control, and hand feed wheel equipped with micrometer adjustment dial for depth boring.

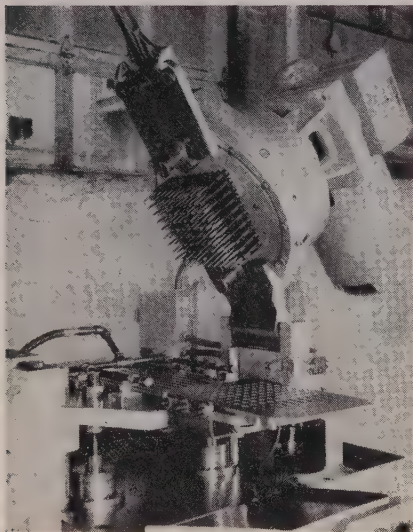
Specifications include: Rail vertical travel, 27 in.; spindle vertical travel, 18 in.; horizontal head travel, 28 in.; and 36 spindle speeds. Write: Carlton Machine Tool Co., Cincinnati 25, Ohio. Phone: Kirby 1-3515



Tapper Has 100 Spindles

A multiple-spindle nut tapping machine has a 100-spindle Zagar gearless tapping head coupled with a vibratory hopper for semiautomatic operation.

The machine taps 10-32 blanks at the rate of 72,000 an hour. Blanks are manually loaded into the hopper which feeds 200 pieces into the cavities of a jig.



Quick change of taps is designed into the machine—the head being on a hinge mechanism so that it can be raised to clear the working position. Broken taps and machine downtime are practically eliminated by a cleaning and sorting device used before blanks are fed into the hopper.

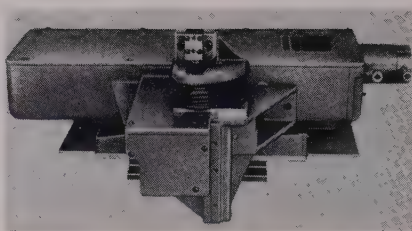
Use of standard machine castings and components assures custom quality at production prices. The machine is approximately 48 x 60 x 90 in. Write: Zagar Inc., 24000 Lakeland Blvd., Cleveland 23, Ohio. Phone: Redwood 1-0500

Dresser Cut Is Continuous

Model 105 hydraulic contour wheel dresser is designed for convenient, out of the way location in the water pan of surface grinders.

It features automatic hydraulic operation, either from the grinder's system or from a separate power unit. Operation is tied into the grinding cycle, providing an uninterrupted cut across the wheel.

Master contour templates are quickly interchangeable so that jobs



may be changed easily. Diamonds are optically preset and dresser readjustment is unnecessary during diamond replacement. Write: Hoglund Engineering & Mfg. Co., 343 Snyder Ave., Berkeley Heights, N. J. Phone: Crestview 3-7188

Brightens Cadmium Plate

Iridite 4P-4 permits a single dip process for chemically brightening and protecting cadmium plated surfaces. It requires no bleach and produces clear, bright films without stain. It rinses easily and has good corrosion protection. It is packaged in 100-lb drums. Write: Allied Research Products Inc., 4004-06 E. Monument St., Baltimore 5, Md. Phone: Peabody 2-9070

Lapping Simplified

A semiautomatic, bench model, flat lapping machine measuring 13 x 18 x 10 in. features a 9-in. close grained cast iron alloy lapping plate.

The lapping surface is a precision ground unit, grooved both radially and spirally for maximum efficiency, and is heat treated to prevent distortion.

Volume output to tolerances of 11.6 millionths of an inch is readily obtainable. The option of utilizing automatic or hand lapping operation fits in with all types of lapping requirements. Specimen lapping is particularly simplified.

The lapping surface can be easily and quickly replaced with a plate



of different diamond charge for specific specimens. A portable mounting stand is optional. Write: Spitfire Tool & Machine Co., 2931 N. Pulaski Rd., Chicago 41, Ill. Phone: Palisade 5-1610

Hard Metals Cut

The Model C-66 electric arc metal disintegrator's best application is in salvage work—removing broken taps, reamers, studs, setscrews, ejector pins, and bushings.

A built-in system pumps coolant through the electrode to wash away the particles of metal as they are removed. The unit is used in conjunction with other shop equipment, such as a drill press.



Cutting action is done by a series of intermittent electric arcs which disintegrate the hardest metals.

The unit provides a fast, economical, and accurate means of drilling curved and other odd-shaped holes in hard metals such as carbide, titanium, Stellite, or cast alloys. Write: Cammann Mfg. Co. Inc., 2700 Henninger Rd., Cleveland 9, Ohio. Phone: Ontario 1-2550

Unit Measures Waviness

The Wavometer is an instrument for measuring waviness on symmetrical surfaces of rotation. The unit illustrated will handle inside and outside diameters of surfaces up to 18 in., and provides for angular adjustments of 30 degrees above to 70 degrees below horizontal.

The instrument gives meter reading of the rms average height of the waves in two wavebands, di-



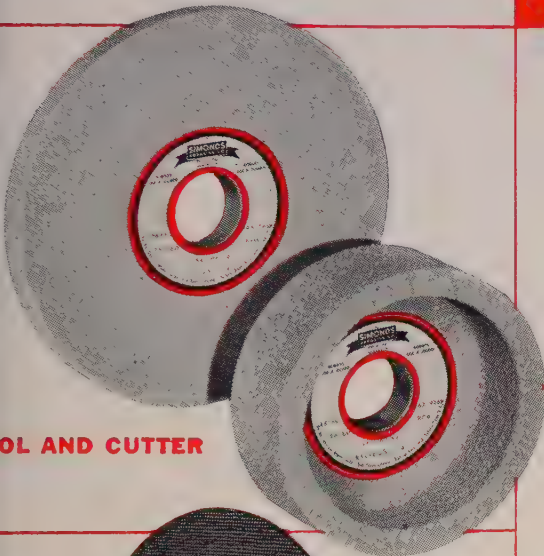
**GENERAL
PURPOSE**



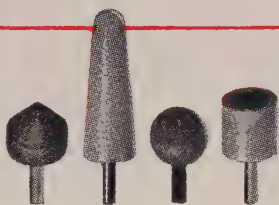
Grinding Wheels

**For Savings and Efficiency
on ALL your grinding jobs**

Grinding wheels for fast stock removal or micro-finishing! Toolroom wheels with new SA Borolon abrasive for improved cutting action! Portables with new IL Bond for longer wheel wear, better grinding! These, plus mounted wheels and fast long-wearing, non-burning cut-off wheels, are part of Simonds complete grinding wheel line — the line for consistently superior results with savings to match. Catalog bulletins on request.

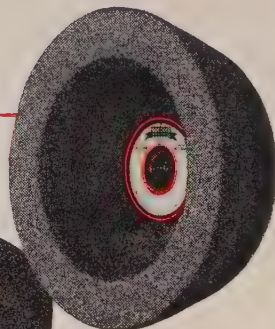


TOOL AND CUTTER

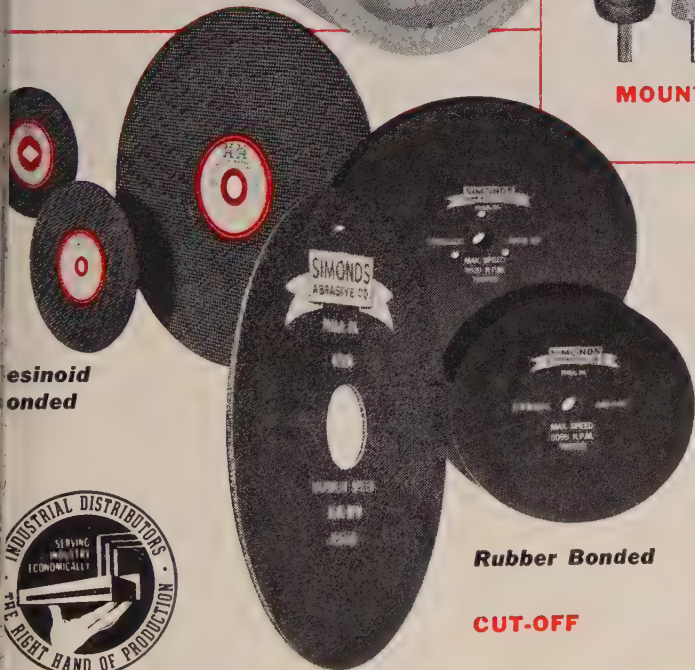


MOUNTED WHEELS

IL Bond



PORTABLES

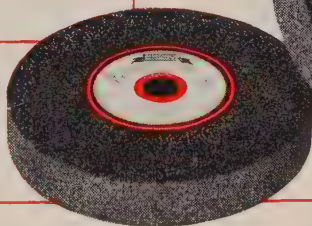


**Resinoid
bonded**

**REINFORCED
RESINOID**

Rubber Bonded

CUT-OFF



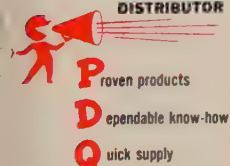
Simex



Fibrex



**CALL YOUR SIMONDS
DISTRIBUTOR**



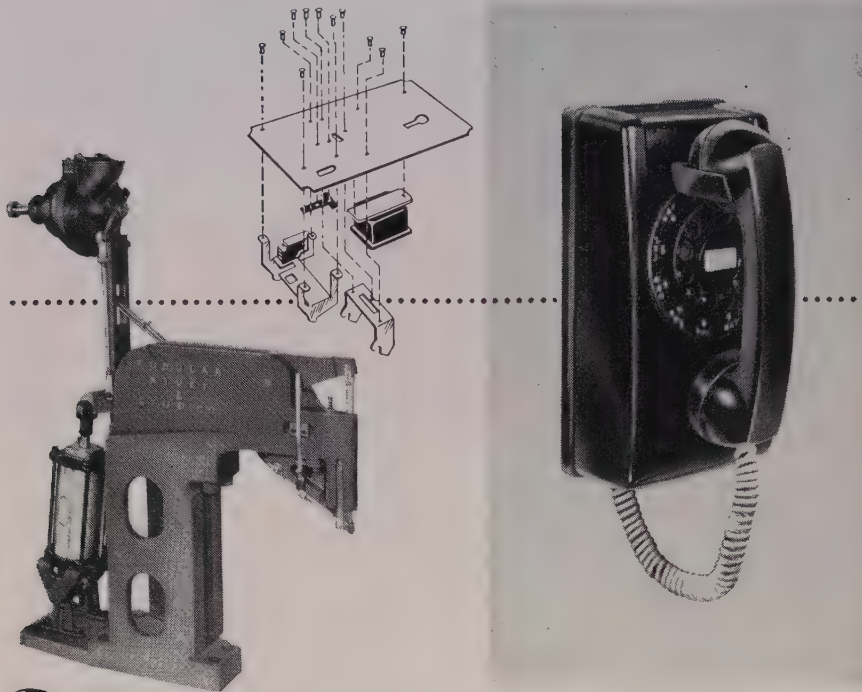
SIMONDS ABRASIVE COMPANY

Tacony & Fraley Sts., Philadelphia 37, Pa.

Division of Simonds Saw and Steel Co.

BRANCHES: Philadelphia • Chicago • Detroit • Shreveport
Los Angeles • San Francisco • Portland, Ore.

SPEEDS FASTENING BY 60%



Tubular's RIVETS AND RIVETERS HELP *Western Electric**

Maximum Efficiency Requires Flexibility

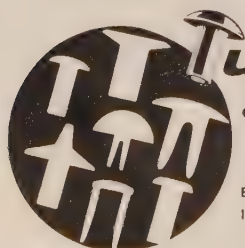
A substantial reduction in the cost of assembling components of the wall-phone base-plate resulted when engineers from Western Electric's Indianapolis Works and **Tubular** solved a fastening problem — they developed a Multi-Head Riveter assembly consisting of 11 automatic, air-operated machines. A bank of 5 riveters was joined to a 6-machine bank by a bridge with a rolling fixture. This method replaced the preliminary fastening plan which was based on 40 operations, 2 machines and 2 operators. The new Multi-Head assembly reduced estimated fastening labor costs about 35%. When production requirements increased tremendously, an additional nominal investment modified the bridge and added a second rolling fixture. Two operators were then easily able to boost the production rate an additional 60%.

* WESTERN ELECTRIC

Western Electric, manufacturing and supply unit for the Bell System, produces telephones, wire and cable, switching systems; and in addition, makes important contributions to defense projects such as DEW Line and Nike Guided Missile Systems.

TUBULAR of Quincy

If assembly speed is an important factor in your own cost picture, take the time right now to learn how **Tubular's** Rivets and Automatic Riveting Machines may help you. **Tubular's** Riveters can feed and set one, or as many as 12 different rivets on different planes at one time. Call our nearest office or send us your blueprint, at no obligation, for complete information and technical help.



**Tubular Rivet
& STUD COMPANY**
WOLLASTON (QUINCY) 70, MASS.

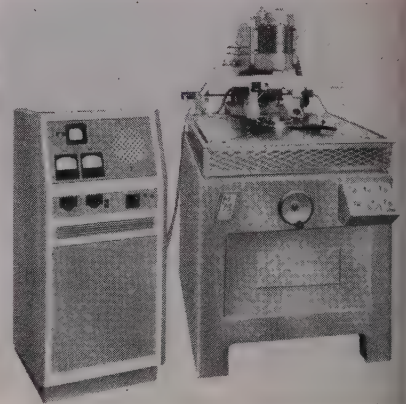
MIDWEST OFFICE & WAREHOUSE — CHICAGO

BRANCH OFFICES: ATLANTA • BUFFALO • CHARLOTTE • DALLAS • DETROIT
INDIANAPOLIS • LOS ANGELES • NEW YORK CITY • PHILADELPHIA • ST. LOUIS
SAN FRANCISCO • SEATTLE

See your local classified directory for phone numbers

FASTEN AUTOMATICALLY
BETTER and FASTER
with TUBULAR'S RIVETS
and MACHINES

NEW PRODUCTS and equipment



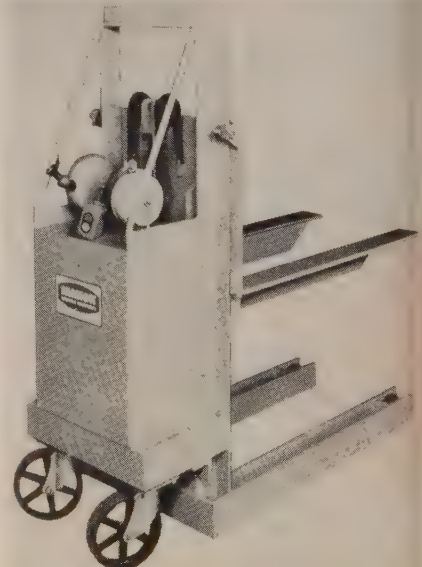
rectly in microinches. In addition, an oscilloscope shows the general shape and spacing of the waves in either waveband. A loudspeaker transforms the surface irregularities into sounds, and deviations from the normal are easily detected by the operator.

The unit is simple to operate, requiring no special skill or technical knowledge. Write: Micrometrical Mfg. Co., 345 S. Main St., Ann Arbor, Mich. Phone: Normandy 2-5626

Trucks Under \$1000

Electrohydraulic lift trucks for fork or platform operations are available at low cost for production lifting jobs.

Manually portable or mobile electric powered models may be had in the Samson line. Lift heights on standard models are from 6 to 68 in., and single or three phase motors can be specified for 110, 220,



Look Overhead... see "NORTHERN"



these notable twins assure dependability

LOCATION — Press bay of a large, new plant manufacturing rear axle parts and components for automobiles and trucks.

SPAN — 96 feet 10 inches, centers of runways.

CAPACITY — 30-tons on Main Hooks, 10-tons on auxiliary hooks.

ELECTRICAL EQUIPMENT — 60-HP motors on Main Hoist, Auxiliary Hoist and Bridge Travel, and 15-HP motor on Trolley Travel, with full magnetic control and direct current on brakes.

ADVANTAGES—These twin NORTHERN cranes serve twin heavy press lines located at each end of the press bay. Designed for heavy duty requirements with compensating type bridge end trucks, and equally suitable electrical equipment and controls, they dependably and safely speed machinery installation or relocation, and assure smooth, uninterrupted flow of work in today's and tomorrow's automated production.

Let us explore similar possibilities in your plant

NORTHERN MATERIAL HANDLING EQUIPMENT

NORTHERN ENGINEERING WORKS

210 CHENE ST. • DETROIT 7, MICH.

DURASPUN

20-FOOT FURNACE ROLLS Centrifugally Cast

...of Duraloy HH Alloy, one of the most widely used high chrome, medium nickel alloys.



Two items concerning these furnace rolls may be of particular interest:

- a—the size: 20 feet long—14" OD, 3/4" wall thickness
- b—welding operations by which reducing cones and shafts (both statically cast of the same alloy) were welded to the centrifugally cast rolls

These two items will serve to emphasize two phases of our service: (1) the large size centrifugally cast tubes we are able to produce and (2) our machining and finishing facilities, including welding.

Our new 16-page general Bulletin — 3354-G — gives complete details. Would you like a copy? When writing or calling would you mind telling us the general nature of your high alloy casting requirements? Better yet, if you have specific requirements on which we could help, let us have the details.



DURALOY Company
OFFICE AND PLANT: Scottsdale, Pa.

EASTERN OFFICE: 12 East 41st Street, New York 17, N. Y.

ATLANTA OFFICE: 76—4th Street, N. W.

CHICAGO OFFICE: 332 South Michigan Avenue

DETROIT OFFICE: 23906 Woodward Avenue, Pleasant Ridge, Mich.

NEW PRODUCTS and equipment

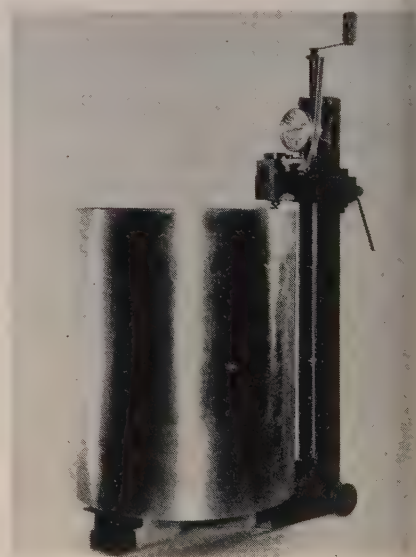
or 440 volts (alternating current). The lifting mechanism may be powered with a 12-volt battery (a selenium rectifier charger and battery are included).

Loads will not descend suddenly, and they can be held in any position with power off. A precision safety bypass valve is preset to rated capacity, and overload will not damage pump or motor.

Pushbuttons on the machine and remote and foot control switches allow operation from more than one point. Write: Dept. SIC, General Sales & Engineering Co., 4525 N. Clark St., Chicago 40, Ill. Phone: Longbeach 1-4644

Portable Brinell Tester

This unit has a capacity exceeding 29 in., a 3 1/2-in. throat, and weighs 45 lb. It can be used in any position.



The unit uses a 5 or 10 mm carbide ball with any load range up to 3000 kg. Write: King Testers Corp., 440 N. 13th St., Philadelphia 23, Pa. Phone: Walnut 5-2481

Argon Purity Raised

Regular industrial argon gas with a guaranteed 99.995 per cent purity when delivered (it contains less than 50 parts per million of impurities) has been put on the market. It is available for all orders without special price or grade category.

Argon delivered as a liquid surpasses the minimum purity of the

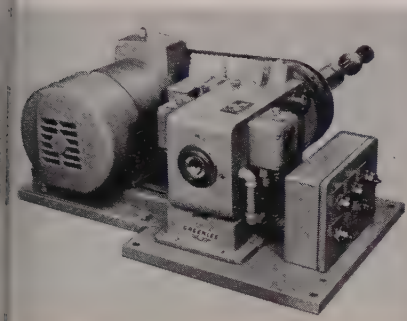
NEW PRODUCTS and equipment

...s, the liquid averaging less than 5 parts per million of impurities. Moisture is practically nil.

It is available in large quantities in either form. Write: Linde Co., Division of Union Carbide Corp., 20 Lexington Ave., New York 17, N. Y. Phone: Murray Hill 6-5100

Hydraulic Boring Unit

Model S-7 is a compact unit that allows precision boring in production assembly. It can be mounted



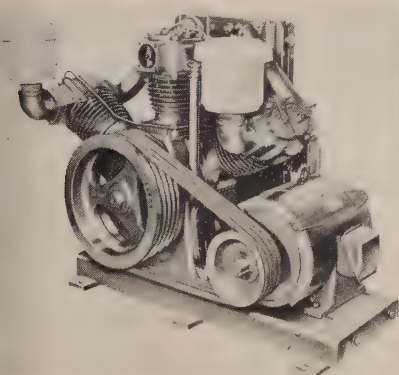
on jigs, fixtures, and multistation machines. Write: Greenlee Bros. & Co., Rockford, Ill. Phone: 3-4881

Compressor Is Compact

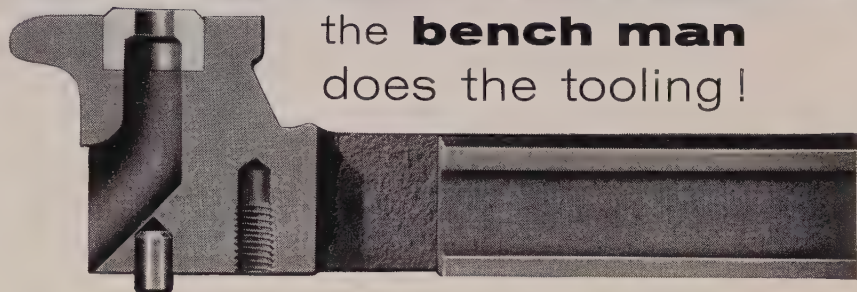
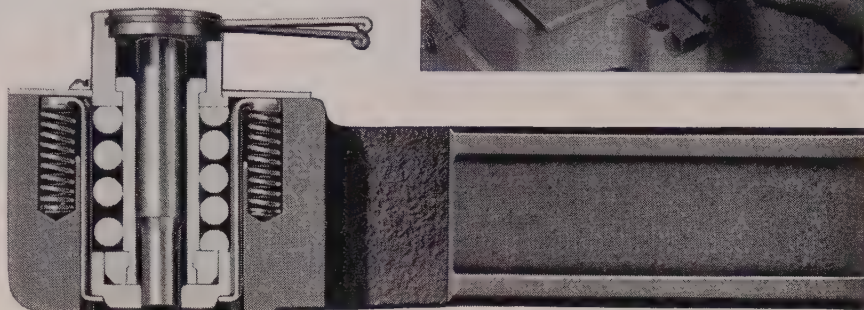
A stationary air compressor, 25-hp Model 25S2, is a high volume unit rated for continuous duty at 175 psi.

It fills the need for a high pressure compressor in which displacements are 120 cfm at 175 psi and 170 rpm, and 133 cfm at 125 psi and 160 rpm.

The 25S2 has two stages, is air cooled, and is driven by an electric motor. It meets requirements of compactness, light weight, and minimum operator attention. By having the motor partially beneath one cylinder, the complete unit length is 60 1/4



Strippit Punching and Notching
Units are easily mounted to templates, T-slotted plates or rails in unlimited patterns for long press runs or quick-change pilot runs. Complete range of standard tools, or "specials" made up on request.



STRIPPIT multiple punching and notching

THE ABOVE CUTAWAY of a Strippit Punching Unit — one of a wide selection for flats, structurals and extrusions up to 3/4" mild steel — illustrates the extreme flexibility, high production and economy of the Strippit system.

NOTE THAT each unit is complete with punch, die button, stripping guide, guide button, lifter assembly and retainers — all quickly interchangeable in a husky holder and actuated by the press ram. Multiple punching — and notching — press setups are easily bench-assembled on drilled mounting templates, with each unit accurately located by the pilot pin in its base. Press down-time is almost negligible in setups of Strippit Punching Units, Notching Units, Punch and Die Assemblies or combinations of all three.

Write today for full details and if you wish, a demonstration on your work at your plant by a Strippit mobile unit.

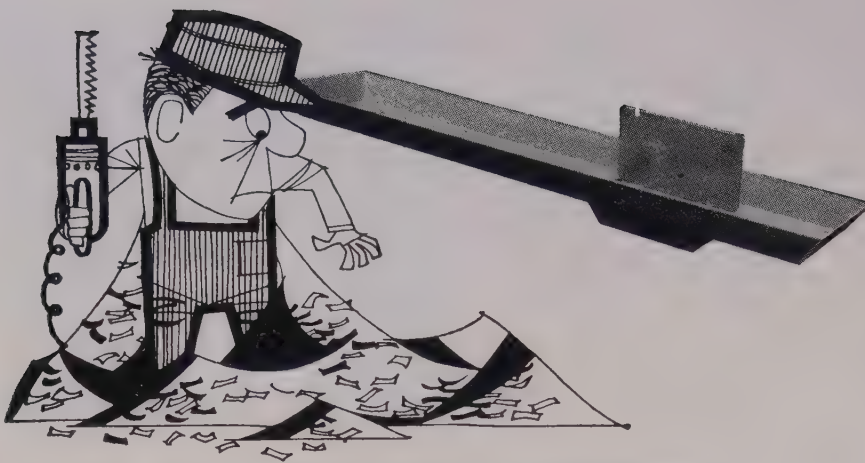
Warehouse stocks in Chicago and Los Angeles.

WALES STRIPPIT COMPANY

210 Buell Road, Akron, New York

Manufactured in Canada by Strippit Tool and Machine Limited, Brampton, Ontario





We don't fabricate flinders but we do make flinder-catchers

You know how flinders are! Unless you watch out, you're soon hip deep in them. A flinder is a small piece, fragment, splinter.

For real flinder-catchers—chip, drip and oil pans—call us. We can also fill your requirements for better weldments, machine bases, guards, covers and sub-assemblies. Control cabinets, too. Send us your blueprints today for prompt and pleasing estimates.

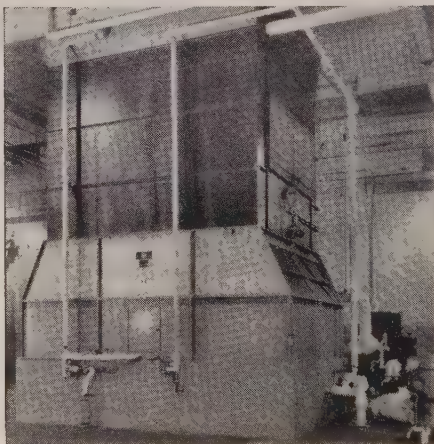
LITTLEFORD

Littleford Bros. Inc. 425 E. Pearl Street Cincinnati 2, Ohio

WHEREVER YOU NEED TO COOL A FLUID... and have a problem of water supply or disposal... use NIAGARA "AERO" HEAT EXCHANGER

► Evaporating a very small amount of water in an air stream you can cool liquids, gases or vapors with atmospheric air, removing heat at the rate of input, controlling temperature precisely. Save 95% of the cost of cooling water; save piping, pumping and power. You quickly recover your equipment cost.

You can cool and hold accurately the temperature of all fluids, condense



vapors, cool water, oils, solutions, intermediates, coolants for mechanical, electrical or thermal processes. You have a closed system free from dirt. You have solved all problems of water availability, quality or disposal, maintenance expense is low.

You may apply this to solvent recovery, vacuum systems controlling reactions, condensing distillates, cooling reflux products.

For more information, write for Bulletins 120, 124, 135. Address Dept.

NIAGARA BLOWER COMPANY

Dept. S-5, 405 Lexington Ave., New York 17, N. Y.

Niagara District Engineers in Principal Cities of U. S. and Canada

NEW PRODUCTS and equipment

in. Unit weight is 1810 lb.

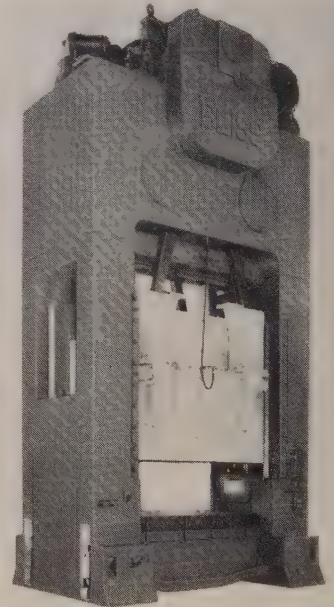
Cylinders are alloy iron and are cooled by a fan which draws air through an intercooler and directs it over the cylinders and heads.

Standard equipment includes a dual control which gives a choice of start-and-stop duty of both compressor and motor or a continuous running of motor with intermittent compressing. Write: Sales Promotion Dept., Le Roi Div., Westinghouse Air Brake Co., Milwaukee 1, Wis. Phone: West 3-9350

Press Has Low Draw Speed

A line of enclosed, straight side, double action presses, designed to operate at high speeds yet maintain draw speed of 75 fpm, is available in capacities from 300 to 1600 tons.

Presses are offered in JIC sizes starting from 72 x 48 in. Featuring 2 or 4 point suspension on the inner ram, all sizes are driven by eccentric gears.



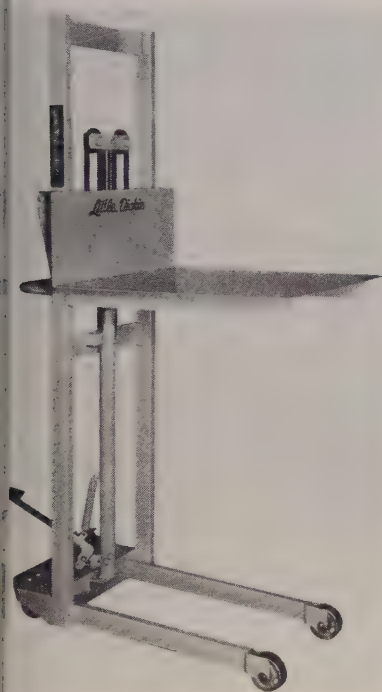
Units can be equipped with the Bliss electronic press drive. This permits reverse jogging without stopping and reversing the motor—saving time with die changes. A servo-system controls clutching and braking, electronically compensating for heat and pressure variations. The drive also allows a rapid advance to the work, a compensated automatic slowdown, and a fast return.

Flywheel, driveshaft, intermediate

rafts, and all slide adjusting mechanisms are mounted on antifriction bearings. Motorized slide adjustment standard on plunger and blankholder slides. The slide may be furnished with manual adjustment. Write: E. W. Bliss Co., 1375 Raff S.W., Canton, Ohio. Phone: Greenwood 7-3421

Lifts 750 lb Up to 65 in.

"Little Dickie" Model FPD is a mobile, foot operated, hydraulic lift and transport truck. Lift is derived from foot effort. Caster steering assures maneuverability.



This unit is for operations too small for the usual power lift equipment. Write: Langley Mfg. Co., 100 Cambridge St., Cambridge 41, Mass. Phone: Trowbridge 6-9031

Large Loader Introduced

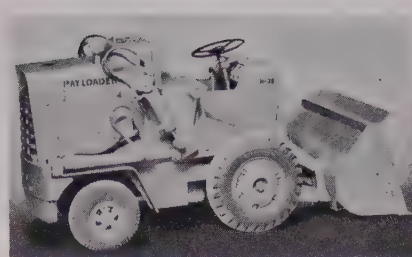
Payloader Model H-25 is a rubber-tired, front-end loader with a rated carrying capacity of 2500 lb. Power steering is standard and it has a short turning radius—6 ft to the outside rear hub. It can operate through 6-ft boxcar doors. A power shift transmission and torque converter are matched to provide the maximum in speed of movement and ease of operation. The power-transfer differential automati-

cally transfers more torque to the drive wheel with the best footing when slippage is encountered.

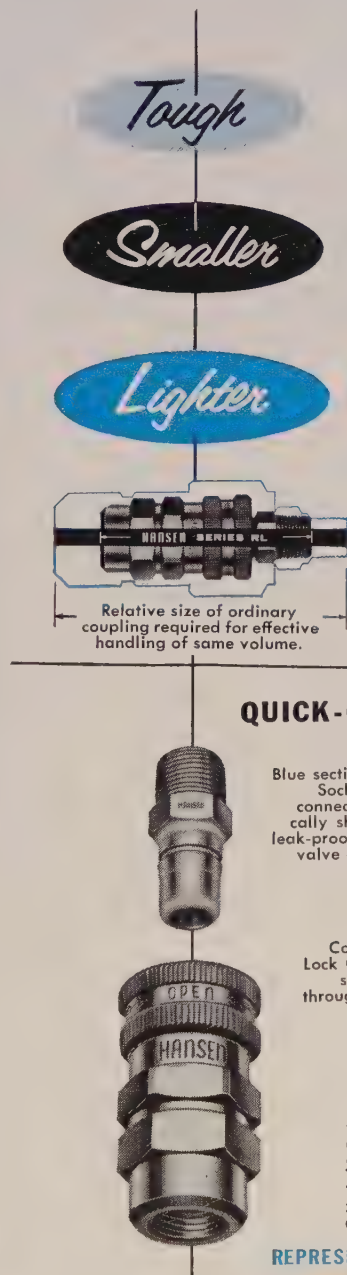
It is being offered with a choice of gasoline, diesel, or liquefied petroleum gas power. The 44-hp gasoline engine is equipped with wet sleeve cylinder liners and overhead valves.

For handling dense, compacted materials, the H-25 has a breakout force of 4500 lb and provides a bucket tip-back of 40 degrees at ground level for stability and balance.

With a carrying capacity of 2500



lb, it can handle a maximum load weighing as much as 125 lb per cu ft using a bucket with an SAE rated capacity of 20 cu ft. Interchangeable front end attachments include sweepers, grab devices, crane



EVERYTHING YOU WANT IN A QUICK-CONNECTIVE PNEUMATIC COUPLING

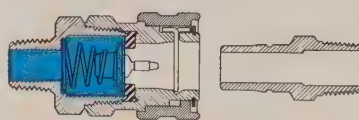
Hansen Series RL One-Way Shut-Off Couplings will handle any job in your shop using $\frac{3}{4}$ " to $\frac{1}{8}$ " connections—from the air line to the air tool. All Hansen Series 2-RL Sockets and Plugs are interchangeable with each other. Likewise all Sockets and Plugs of the slightly larger, greater capacity Series 3-RL are similarly interchangeable with each other.

Consequently, by standardizing on either Hansen Series 2-RL or Series 3-RL Couplings, you eliminate any need for various size couplings in your hook-up—make it easy to keep stock of parts in balance—and hold inventories to a minimum.

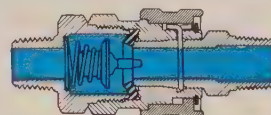
Machined from solid steel bar stock, Plugs and Sockets are hardened and rust-proofed for long wear. Locking ring provides positive lock and assures tight fit. Equipped with automatic sleeve lock.

THE HANSEN SERIES RL QUICK-CONNECTIVE RING-LOCK COUPLING

Blue section shows how Socket, when disconnected, automatically shuts off air by leak-proof seal of metal valve against rubber valve seat.



Connected Hansen Ring-Lock Coupling. Blue section shows free flow of air through connected Coupling.



WRITE FOR THE HANSEN CATALOG

Here's an always ready reference when you want information on couplings in a hurry. List complete range of sizes of Hansen One-Way Shut-Off, Two-Way Shut-Off, and Straight-Through Couplings—including Special Service Couplings for L.P. Gas, Steam, Oxygen, Acetylene, etc.



REPRESENTATIVES IN PRINCIPAL CITIES

SINCE 1915



QUICK-CONNECTIVE FLUID LINE COUPLINGS

THE HANSEN

MANUFACTURING COMPANY

4031 WEST 150th STREET • CLEVELAND 35, OHIO

hook, tine and scrap buckets, and snowplows.

The fuel tank has sufficient capacity to permit full 8-hour operation. Write: Frank G. Hough Co., Libertyville, Ill., subsidiary of International Harvester Co. Phone: 2-4000

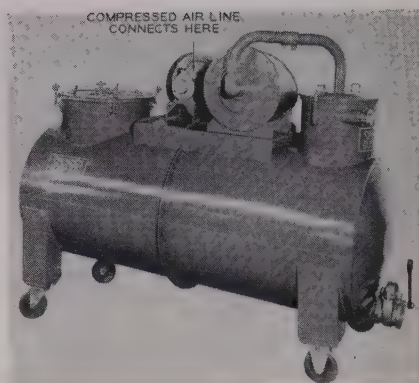
Vacuum Moves Coolants

A vacuum unit, called Sump-Vac, for removing cutting oils and coolants from sumps of machine tools is driven by an air motor or can be powered from an 80-psi compressed air line.

The unit has a capacity of 225 gallons, has wheels for easy mobility, and a hook arrangement for attachment to in-plant trucks.

No liquid passes through the vacuum producing unit. As a result, moving parts are free from any abrasive or corrosive action of the grit and liquids being handled.

Sump-Vac, also available in 55 and 125 gallon capacities, can be provided with single or polyphase



electric motor drive. Write: Spencer Turbine Co., 486 New Park Ave., Hartford 6, Conn. Phone: Adams 3-6293

Epoxy-Based Sealer

Homalite 345 makes permanent repairs in metals, plastics, wood, concrete, and other materials. Repaired equipment can be back in service within an hour. It will adhere to any clean, dry material. A coating of the sealer is applied to the material needing repair, a layer of glass cloth is pressed into the coating, and another coating applied on top of the glass cloth. Ad-

ditional layers of glass cloth and the compound may be applied for extra strength.

It can also be used as a lining for tanks and ducts handling fluid chemicals and other corrosive materials. Its high dielectric properties make it useful for insulating, sealing and repairing cables, coils, armatures, transformers, and other electrical equipment. It is unaffected by temperatures up to 150° F and is highly resistant to impact, abrasion, and corrosion. Write: Homalite Corp., 15 Brookside Dr., Wilmington 4, Del. Phone: Olympia 2-6641

Agent Modifies Cadmium

A leveling and grain refining agent for cadmium plating solutions has been developed to modify the grain structure of cadmium plate. This product assures uniform results with chromate conversion coatings.

It improves the throwing power of the bath, reduces burning, and gives consistent colored chromating results with iridescent or olive drab treatments. Write: Conversion Chemical Corp., Rockville, Conn.

"PRE-CLEANING PAYS OFF!"

WE'RE GETTING A PRETTY UNEVEN ETCH ON OUR ALUMINUM STRUCTURAL PIECES, DAVE. THE SALES DEPARTMENT IS HOWLING BECAUSE OF THE FINISH WE'RE GIVING THE

I RECOMMEND USING A PRE-CLEANER, DAVE. TRY RUNNING YOUR PARTS THROUGH PENNSALT CLEANER MC-1® BEFORE ETCHING. IT'S GREAT FOR SETTING UP THE SURFACE SO THAT IT'S CLEAN OF SOIL, OIL AND UNEVEN OXIDE.

THAT MEANS AN EXTRA OPERATION, JIM.

BUT IT WON'T ADD TO COST. PENNSALT CLEANER MC-1 GIVES A LIGHT ETCH ITSELF. YOU CUT TIME IN THE ETCH BATH. AND YOU USE LESS ETCHANT, BECAUSE IT DOESN'T HAVE TO REMOVE SOIL.

NEW Literature

Write directly to the company for a copy

Precision-Rolled Strip

A pamphlet, "Electronic Precision Strip Selector," is designed to help the electronic engineer select the right precision-rolled metal strip. All metals rolled down to 0.0005 in. and precision tolerances as close as ± 0.001 in. are covered. Applications are given for the newer metals now coming into prominence, such as columbium, zirconium, tantalum, and titanium. American Silver Co., 36-07 Prince St., Flushing 54, N. Y.

Coated Pipe and Tubing

A folder, ADV.770-R, on X-Tru-Coat plastic-coated steel pipe and tubing describes the problems of pipeline corrosion. It also shows how the strength of steel and the protection of plastics have been combined to meet the requirements of the most severe corrosive applications. Advertising Div., Republic Steel Corp., Republic Bldg., Cleveland 1, Ohio.

Dial-Type Millers

Catalog M-2003 for plain, universal, and vertical dial-type milling machines covers feed selection, feed changes, control stations, basic and automatic tables, and extra equipment. Cincinnati Milling Machine Co., Cincinnati 9, Ohio.

Plug-in Busway

A 24-page booklet, GEA-6173, describes a 225-1000 ampere plug-in Flex-A-Power busway with aluminum conductors. Type DE is designed for indoor use as a plug-in or feeder system in industrial plants and commercial buildings. Advertising and Sales Promotion, Distribution Assemblies Dept., General Electric Co., Plainville, Conn.

Heavy-Duty Baler

A 4-page general specification sheet and a descriptive folder on the Duomatic baler are available. Data on box dimensions, ejector, cylinders, power unit, oil reservoir, and installation and performance of the Model 260 are covered. Machine box capacity is 693.75 cu ft. Wheland Co., Chattanooga, Tenn.

Electric Hoists

An 8-page bulletin, DH-133D, describes Speedway electric hoists with capacities of 500 to 4000 lb, equipped with solenoid motor brakes. Construction details, weights, dimensions, suspensions, specifications, clearances, accessibility, and general information for plant operators are given. Wright Hoist Div., American Chain & Cable Co. Inc., York, Pa.

Couplings

Catalog C-210-A describes a comprehensive line of couplings. Types include diecast metals and steel; fixed bore and bushed; rigid, flexible, chain, and malleable. Browning Mfg. Co., Maysville, Ky.

Lapping Machines

A 4-page lapping machine catalog section lists detailed data and specifications of five standard model machines. It also explains practical applications of the units for laboratory work and production. Syntron Co., 370 Lexington Ave., Homer City, Pa.

Fire Extinguisher Systems

I-19 is an 8-page brochure on carbon dioxide fire extinguishing systems, fire detection equipment, and ultrasonic and photoelectric burglar detection systems. Portable extinguishers also are covered. Walter Kidde & Co. Inc., 675 Main St., Belleville 9, N. J.

Material Storage


A Flow Rack brochure describes the "live storage" approach. Applications for most storage requirements are covered. Rapids-Standard Co. Inc., 342 Rapistan Bldg., Grand Rapids 2, Mich.

Magnetic Drive

"Whitney-Tormag Magnetic Drive," an 8-page bulletin, describes a safety device for installation between machine tool and its motor. It prevents shocks and overloads. Whitney Chain Co., Hartford, Conn.

Fork Truck Maintenance

An electric fork truck preventive maintenance chart shows 28 areas that should be inspected daily, weekly, or monthly. Dept. R8-6, Lewis-Shepard Products Inc., 125 Walnut St., Watertown 72, Mass.



HERE'S A MAN WHO MIGHT HELP US... JIM CARLIN FROM PENNSALT. HE HELPED US SET UP OUR ETCHING SYSTEM.

I NOTICED ON MY WAY THROUGH THE SHOP THAT YOU'VE SWITCHED TO A HEAVIER GRADE OF OIL FOR DRAWING. THAT'S PROBABLY WHAT'S CAUSING THE TROUBLE. SOMETIMES, ALUMINUM HAS TO BE PRE-CLEANED OR YOU'LL GET AN UNEVEN ETCH.

WHAT WOULD YOU RECOMMEND, JIM?

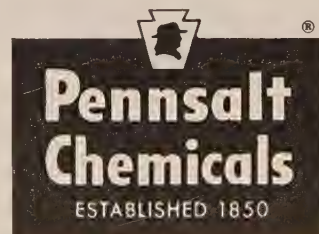
LATER THAT MONTH...

WHAT'S THAT FOR A SMOOTH SATIN ETCH, JIM? COMPETITION WILL HAVE TO GO SOME TO MATCH THAT.

SMOOTH AS A KITTEN'S EAR, DAVE. PENNSALT CLEANER MC-1 SURELY HELPS YOU GET A BETTER JOB OF ETCHING WITHOUT INCREASING ETCH TIME OR COST.

Whenever metal surface preparation gives you rough problems, call your Pennsalt salesman. He can help you to "A BETTER START FOR YOUR FINISH"

METAL PROCESSING
DEPARTMENT 640
PENNSALT CHEMICALS CORP.
3 Penn Center, Philadelphia 2, Pa.



A better start for your finish

NEW

from



STRIP STEEL DIVISION

exclusive

basic oxygen steel cold rolled strip

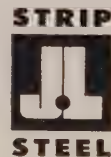
especially advantageous for deep drawing requirements

High purity, ductile, Basic Oxygen Steel is now available for the first time in restricted specification cold rolled strip. Low phosphorous, sulphur and nitrogen content characterize this new product. The combination of this high quality low carbon steel and the controlled processing typical of J&L's Restricted Specification Strip, results in a new product

with many fabricating advantages. For deep drawing and intricate forming operations, superior yields and lower costs may be anticipated. The extent to which this new product may benefit your product deserves immediate investigation. Your inquiry will receive our prompt and interested attention.

J&L STRIP STEEL DIVISION produces a full line of restricted and standard specification strip steel in these grades and types:

- Low Carbon
- High Carbon
- Tempered Spring Steel
- Molten Zinc Coated (JalZinc)
- Electrolytic Zinc, Tin, Copper and Brass Coated
- Alloy
- Stainless
- Painted



Jones & Laughlin

STEEL CORPORATION

STRIP STEEL DIVISION

GENERAL OFFICES: YOUNGSTOWN 1, OHIO

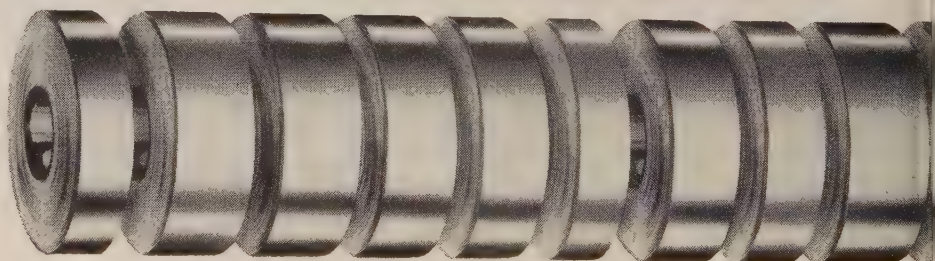
PLANTS:

YOUNGSTOWN • INDIANAPOLIS • LOS ANGELES • KENILWORTH, N. J.

SALES OFFICES:

New York • Rochester • Newington, Conn. • Youngstown • Detroit
Cleveland • Indianapolis • Chicago • Los Angeles • San Francisco

FORMERLY THE COLD METAL PRODUCTS COMPANY



CONSERVATISM is the dominant note in market appraisals being made by the steel industry's spokesmen. Production forecasts have been scaled down to 1954 size in estimates that run from 87 million to 91 million tons.

Speaking for those who expect an 87-million-ton year, Avery C. Adams, president of Jones & Laughlin Steel Corp., makes this projection for the industry: Second quarter operations will average 55 per cent of capacity, 1 point better than they were in the first period. Output will jump to 65 per cent in the third quarter, to 75 per cent in the fourth.

GRADUAL RECOVERY—In Mr. Adams' opinion, no upturn can be expected until consumers complete their inventory adjustments. That should happen "sometime in the second quarter." Then shipments will match consumption.

AFTER LABOR DAY—Taking a somewhat different view of immediate prospects, George M. Humphrey, National Steel Corp.'s chairman, says second quarter operations will probably be a little lower than those of the first three months. The third quarter is "anybody's guess," he believes, with vacations possibly slowing the inventory reduction. "As we pass Labor Day, we can look forward to greater volume."

CITES STRONG POINTS—Forecasting production of about 90 million tons of steel, Marcus J. Aurelius, administrative vice president of U. S. Steel Corp., looks for improvement in appliances, housing starts, farm equipment, and construction. He believes the inventory correction will have spent itself by the end of the third quarter.

PLATE INVENTORIES HIGH—Almost one-

third of the purchasing agents participating in STEEL's quarterly inventory survey (see Page 125) think their inventories of light and heavy plates are too high. One-fourth of the buyers have too many structurals. Inventories of those products should be normal in three months.

PROFIT SQUEEZE—For most steelmakers, first quarter earnings reports were anything but encouraging (see Page 51). Low volume production resulted in higher costs and drastically reduced profits. Some companies lost money. Others failed to cover their dividends. When wage rates go up on July 1, steelmakers will find it hard to pass the added costs along, harder still to absorb them.

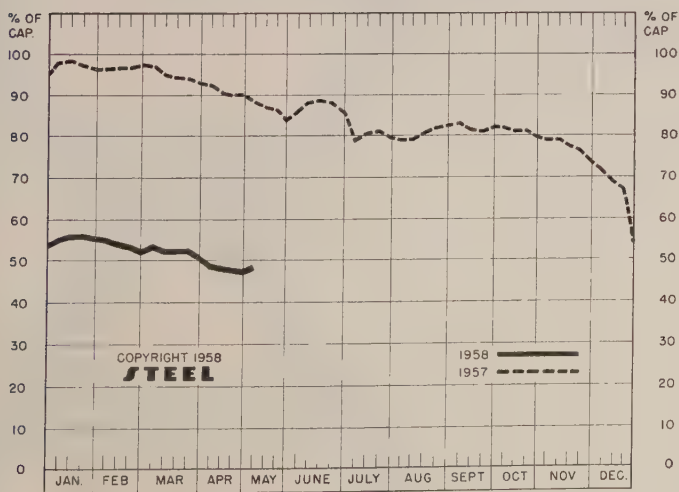
If buyers think prices are going up, they're doing nothing about it. Mills report no hedge buying, probably because inventories are too big to suit most consumers. Under present conditions, the speculative buyer is apt to pay more for borrowed money or storage than he could gain by a well-timed purchase.

AUTOMAKERS BUY EARLY—Detroit diemakers are hoping against hope that the automotive companies will put out programs in July.

They're in dire need of business. It's estimated that 150 to 170 small manufacturing firms in the Detroit area (mostly die and stamping shops) have gone out of business during the last six months.

INGOT RATE IMPROVES—After five straight weeks of declining output, the industry recorded a modest gain in steelmaking last week. Furnaces were operated at 48 per cent of capacity, up 1 point. Production was about 1,296,000 net tons of steel for ingots and castings.

NATIONAL STEELWORKS OPERATIONS



DISTRICT INGOT RATES

(Percentage of Capacity Engaged)

	Week Ended May 4	Change	Same 1957	Week 1956
Pittsburgh	50	+ 3*	90.5	100.5
Chicago	55.5	+ 2	88.5	98
Mid-Atlantic	48	0	96	99
Youngstown	42	- 2	86	97
Wheeling	57.5	+ 0.5	90	103
Cleveland	29	- 0.5*	85.5	93
Buffalo	34.5	- 2	95	105
Birmingham	60	+ 6	95.5	23.5
New England	40	0	56	88
Cincinnati	29.5	+ 0.5*	60	93
St. Louis	68.5	+ 12	90	94
Detroit	12	- 1.5*	92	99.5
Western	67	0*	100	109
National Rate ..	48	+ 1	88.5	98.5

INGOT PRODUCTION†

	Week Ended May 4	Week Ago	Month Ago	Year Ago
INDEX	80.5†	79.1	81.7	138.6
(1947-49=100)				
NET TONS	1,293†	1,270	1,312	2,226
(In thousands)				

*Change from preceding week's revised rate.
†Estimated. ‡American Iron & Steel Institute.
Weekly capacity (net tons): 2,699,173 in 1958; 2,559,490 in 1957; 2,461,893 in 1956.

Full integration makes Olin Aluminum a dependable source for you . . .



Behind every finished order of custom-tailored Olin Aluminum lies a fully-integrated chain of production facilities reaching all the way to the ore fields at Surinam.

Control over every stage of the production of your Olin Aluminum—from ore field to alumina and reduction plants, and to strategically located processing mills—assures you of a dependable source of supply. Now and tomorrow.

Of equal importance, the services of Olin Aluminum Sales Representatives, Field Engineers and Production Engineers, working in cooperation with your own staff, assure you the kind of special customer satisfaction that has been an Olin Mathieson Service principle for years.

For service now, write: Aluminum Division, Olin Mathieson Chemical Corporation, 400 Park Avenue, New York 22, New York.

® AND "OLIN ALUMINUM" ARE TRADEMARKS



Symbol of New Standards of Quality and Service in the Aluminum Industry



MILL PRODUCTS	CURRENT INVENTORIES					3rd Quarter FORECAST		
	UNDER 10 DAYS	10-30 DAYS	30-60 DAYS	60-90 DAYS	3-6 MONTHS	LOWER	SAME	HIGHER
HOT-ROLLED CARBON BARS	5%	27%	42%	18%	8%	19%	74%	7%
COLD-FINISHED BARS	3%	25%	54%	12%	6%	26%	68%	6%
H & C-R SHEETS, STRIP	8%	18%	41%	28%	5%	24%	64%	12%
LIGHT PLATES	5%	9%	40%	32%	14%	37%	43%	20%
HEAVY PLATES	4%	16%	44%	19%	17%	34%	51%	15%
STRUCTURAL SHAPES	5%	24%	37%	24%	10%	43%	46%	11%
COPPER & BRASS	8%	22%	48%	14%	8%	14%	76%	10%
ALUMINUM	7%	20%	55%	18%	—	28%	64%	8%

FIGURES are percentages of respondents to STEEL's quarterly survey. COLOR UNDERSCORED figures show how most respondents reported.

Buyers Say: 'We'll Cut Stocks Further'

Many purchasing agents complain of excessive inventories as deliveries improve and metal needs decline. Stocks won't be pared to satisfactory levels until summer

INVENTORIES are falling, but they haven't hit bottom yet. Two of every five metal buyers have what they consider to be more tonnage than they require in one or more products, STEEL's second quarter survey of metal inventories shows.

Some 40 per cent of purchasing agents queried by STEEL named at least one product in which supply is larger than desired. Dissatisfaction with inventories is greatest in plates and structural shapes, as the accompanying table shows.

What's Normal? — Buyers generally aim to keep inventories at a 30 to 60 day level. More than one-third of the buyers questioned

expressed displeasure with plate and structural inventories because they hold more than two months' supply of these products. Purchasers of steel bars, copper, brass, and aluminum are cutting their holdings below the 30-day level when possible. Three months ago, 24 per cent of the users of hot-rolled bars had less than one month's inventory. Now, 32 per cent have cut stocks below that level.

The bulk of respondents say stocks will be at satisfactory levels in July. A few say August or later. Their determination to pare inventories has receded slightly since STEEL's previous survey (Feb. 3, p. 159). Then, 34 per cent of pur-

chasers expected a decline in the ensuing quarter, and 59 per cent thought stocks would remain level. Now, 26 per cent look for a decline in the next three months, 11 per cent forecast a rise, and 63 per

Stocks 'Too High'

(% of buyers reporting)

Stainless	4
Wire	7
Welded tubes	7
Aluminum	10
Copper	14
Hot-rolled bars	15
Sheets	17
Cold-finished bars	18
Seamless tubes	23
Structural shapes	24
Light plates	30
Heavy plates	30

cent think stocks will remain level.

Still Chopping—Inventory plans of nonferrous metal buyers are slightly more stable than those of steel buyers, but both expect continued reductions in stocks. Of aluminum, copper, and brass purchasers, 21 per cent predict a drop in inventories within the next three months, while 70 per cent say they will remain constant. Among steel buyers, 27 per cent forecast an inventory reduction, and 63 per cent believe stocks will remain level.

Purchasing agents complain that

dull sales hamper reduction of inventories. A Pennsylvania buyer of plates and structurals says, "We have six months' supply of steel. With our operations low, we won't cut into inventories significantly during the summer. A fall upswing in business should bring our stocks to satisfactory levels, but this won't occur until October."

Normal by Summer—Despite a sprinkling of these pessimistic reports, 80 per cent of buyers who report too much steel in inventory predict satisfactory levels in the

next three months. The remaining 20 per cent think inventory reductions will continue for four months or longer.

One year ago (STEEL, May 6, 1957, p. 127), 20 per cent of heavy plate users reported difficulty in obtaining enough steel, while 14 per cent of standard structural buyers mentioned supply shortages. In the current survey, not one buyer of bars, sheets, plates, structurals, or nonferrous metals is complaining of trouble in filling his needs. With no shortages likely to develop, you can expect to see the buyer remain in control of the market for steel for at least three more months.

Steel Bars . . .

Bar Prices, Page 134

There's little change in demand for carbon and alloy merchant steel bars.

Manufacturers are still leaning heavily on inventories, and though consumption is believed to be out-running mill shipments by a substantial margin, there are no signs of an early pickup in orders.

Buying is marked by the absence of large tonnage orders. But the frequency of orders appears to be holding at the pace of recent weeks. Availability of prompt shipments from mills encourages spot ordering.

If there is to be any hedge buying against an anticipated midyear price increase, it will have to start soon. So far, buyers have shown little interest in ordering for stock.

Orders from bolt and nut makers and forge shops are limited—some forge shops have a lot of sizes and grades of steel in inventory that are not suitable for current work.

Railroad buying of bars (and other steel products) is blunted by shrinking car shop operations and falling car order backlogs. Automotive demand is not expected to improve much before August.

Cold-finished bar orders are more numerous than those for hot rolled. The cold drawers are meeting demand for prompt shipments from hot bar inventories or cold drawn stocks.

In the Chicago district, April orders about equalled those placed in March, which, in turn, were behind those placed in February.

Industrywise, the farm implement makers are purchasing larger tonnages than they did a year ago.



ANY GLOBE SUPERIOR LADLE BRICK

*could survive the heat that
destroys a shooting star*

This greater heat resistance is one of the reasons why GLOBE BRICK lasts longer. There is a type for every need of ladle lining. We offer quality and service, so help yourself to some of the wisdom we've gained in 85 years of service to the steel industry.



The **GLOBE BRICK Co.**
EAST LIVERPOOL, OHIO

The picture among those implement manufacturers varies—some are managing only to keep a percentage point or two ahead of last year, while others report they are up as much as 25 per cent. The Allis-Chalmers plant in Independence, Mo., is operating at near record levels.

Another busy bar-buying industry is that making auto replacement parts. The philosophy of keeping the "old buggy" running another year before buying a new one is being reflected in such products as sparkplugs, brake shoes, etc.

Tool Steel . . .

Tool Steel Prices, Page 138

Tool steel sales are moving sideways with little prospect for early improvement. Customers have cut their inventories to the bone and are relying on quick warehouse service. One mill says its sales are better than they were in the fourth quarter, but they are 36 per cent under the level of a year ago.

Shipments to the plastic molding, aluminum extrusion, zinc and aluminum diecasting industries are relatively good. Sales to the major manufacturers of small tools are poor.

Plates . . .

Plate Prices, Page 134

Sluggish demand for plates contrasts strikingly with the market situation at this season a year ago. Today, consumers are well stocked; they have no trouble getting practically any tonnage for any delivery they want. A year ago, there wasn't enough material to go around, especially the heavy gages. Deliveries extended several months, and premium prices were quoted by some producers.

Requirements of shipyards and structural shops are slightly heavier in the East, but demand for plate specialties is declining, including heavy equipment weldments and industrial pressure vessels. The lack of buying by the railroad car shops is keenly felt.

Plate fabricators are doing little buying for inventory in any size range. They are well stocked on the light gages, and order the heavy gages and specialties only when they are involved in new bookings.

Sheets, Strip . . .

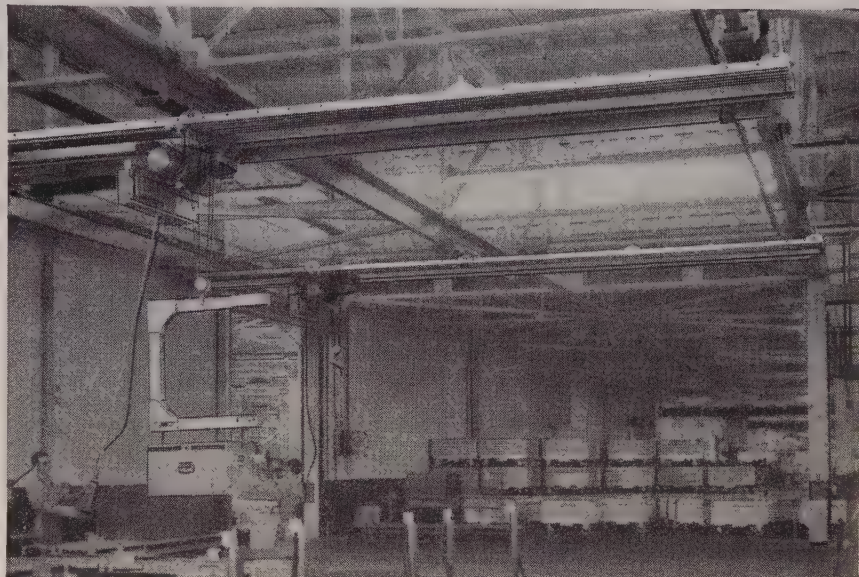
Sheet & Strip Prices, Pages 135 & 136

Despite a minimum of inventory and price-hedge covering, flat-rolled steel orders coming in to producers from a broader range of consumers, point to a moderate increase in bookings during May. More carbon sheet and strip users are scheduling slightly heavier consumption over the next few weeks. Their current orders reflect a mild bulge in manufacturing activity.

Midwestern mills are disappointed

by the failure of order bookings to reflect reported increased production by several appliance makers. Office furniture manufacturers, small tankmakers, range builders, and the construction industry are among those lines placing larger tonnages with the mills. But demand from the heavy consuming industries, notably automotive and railroad car shops, continues to lag.

At Cleveland, sellers have received small-volume sheet orders for pilot production of 1959 model cars. Sheetmakers say the auto builders



Courtesy Fisher Body Division, General Motors Corporation

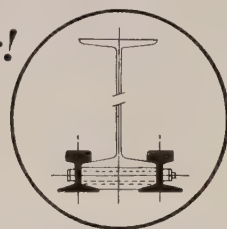
92 ABELL-HOWE CRANES

for automobile body builder!

Specifically, seventy 10-ton cranes, ten 5-ton cranes and twelve 2-ton cranes . . . serving the receiving, production facilities, storage, maintenance and repair, and shipping areas in two separate plants.

The entire job was completed in good order—equipment was accepted promptly upon completion, and there have been no reported cases of malfunction.

Granted, Abell-Howe does not write orders like this every day. In fact, our business has been built on the satisfaction of single crane buyers. Point is, these cranes were purchased in quantity simply because Abell-Howe has the quality construction as well as the conservative price!



Abell-Howe 10-ton crane bridges at Fisher Body are specially designed with Timken bearing equipped flat tread wheels operating on 160# ASCE crane rails fastened to lower flange of I-beam runways . . . no better design for heavy service!

SEND FOR BULLETINS



S-110 SINGLE GIRDER CRANES
Underhung and Top-Running models. Cap. 2,000 to 10,000 lbs.

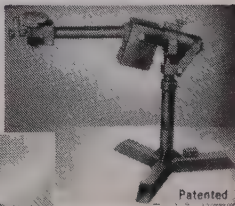
C-110 CRANEMASTER CRANES
4 basic types to suit all building conditions. Cap. 3 to 20 tons.



7747 W. Van Buren St. Forest Park, Ill.

ARONSON Offers You Over 200 PROVEN Standard Stock Models of Quality POSITIONERS 'POSITIONEERED' to your exact Requirements

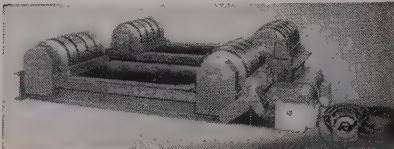
Aronson Universal Balance Positioners (T. M. Reg.) position your weldments effectively, instantly for downhand welding. Capacities to 2000 lbs.



Patented



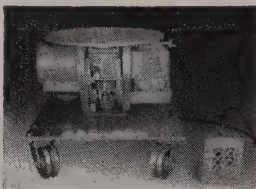
Aronson TracTred (T. M. Reg.) Turning Rolls for thin-walled heavy cylindrical work to 27 tons capacity. Zero to 100 IPM turning speed and Built-In Grounding.



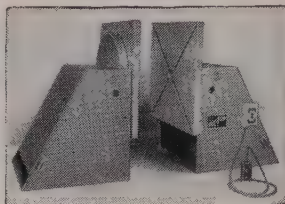
Heavy Duty Precision Built Rubber and Steel Tired Turning and Pipe Rolls, 100% overload protected. Capacities to 600 Tons.



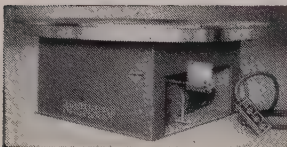
Fully Automatic Gear Driven Positioners, featuring Geared Elevation, 135° Tilting and Variable or Constant Speed Rotation. Capacities to 350,000 lbs.



Model D Gear Driven Positioners. Compact, Precise, Rugged. Capacities to 1000 lbs.



Rugged Head and Tail Stock for positioning bulky weldments between centers. Table Backup for Zero Deflection. Magnetic Braking. Capacities to 160,000 lbs. Geared Elevation Optional.



Heavy Duty Floor Turntables with precision speed control and Magnetic Braking, used for welding, burning, X-raying, etc. Capacities to 120,000 lbs., various heights and speeds.

Bench Turntable Automatic Positioners with Mercury Grounding. Capacities to 500 lbs.



Quality POSITIONERS by

Aronson MACHINE COMPANY
ARCADE, NEW YORK

Visit us in Booth 626—Southwestern Metal Exposition—Dallas, Texas—May 12 to 16

will have to begin ordering steel from the mills late in July if they are to begin 1959 model production in September.

More orders went into books during the last week of April than in the preceding three weeks, report sellers in the Southwest. The pickup was across the board, with warehouses taking a wider range of items.

Buffalo suppliers have been heartened by the national pickup in automobile sales, but they have yet to see any gain in orders for sheets and other steel products.

In addition to the farm trade creating a seasonal demand for galvanized sheets, one producer in the Chicago area reports his firm is getting a fair amount of orders from contractors installing air conditioning in older buildings.

Tin Plate . . .

Tin Plate Prices, Page 136

Tin plate is still the brightest spot in the steel product market.

One midwestern executive says demand should continue its 7 per cent annual increase. But he thinks that tonnage may not reflect the growth because of the trend to lighter base metal (100 to 90 lb).

The soft drink industry is expected to take an increasingly larger tonnage.

Reinforcing Bars . . .

Reinforcing Bar Prices, Page 134

Heavier requirements for concrete reinforcing bars are being accompanied by better buying of highway mesh. Bridges and schools account for the bulk of the increase in demand.

Fabricators of bars and structurals in the Chicago district report an upturn in estimating, most of it on small "stuff." Water tank storage for municipalities is a pretty active area in the structural market.

In New England, 5000 tons of reinforcing bars have been placed in the last few days. In the Pacific Northwest, sellers' backlogs are below normal, but commercial construction and highway projects are absorbing sizable tonnages of bars.

Mill shipments to fabricators are running three to four weeks, with mill rolling capacity and semifinished steel supplies ample without lengthening deliveries.



DYSON LARGE EYE BARS

...1 3/4" thru 8"
BOLT DIAMETER

- Made singly or coupled to specifications
- Regular, high tensile and stainless steels
- Modern machining and heat treating facilities
- Complete non-destructive inspection, Magnaflux, X-ray, Radiography, tensile and chemical analysis
- Adequate steel inventory assures prompt delivery



FREE WEIGHT TABLES OF STEEL

Write for our 72-page weight book containing 61 tables of weights of round, square, hexagon, octagon and flat steel bars.

JOSEPH DYSON & SONS, INC.

5125 St. Clair Ave., Cleveland 3, Ohio
Telephone: HEnderson 1-6157

Our Specialty LARGE NUTS...STUDS...EYE BARS



Wire fabric demand is expected to pick up in the Detroit area on the basis of road construction contracts recently signed in Lansing, Mich. More road contracts due to be signed in Columbus, Ohio, this week are expected to stimulate ordering. Building requirements and pipe needs are rising slowly.

Stainless Steel . . .

Stainless Steel Prices, Page 138

Sales of stainless bars and billets are stronger at Detroit. First quarter shipments were reported a bit ahead of those in the like period a year ago, one maker reports. But there's still no activity in stainless steel tied closely to the automotive industry.

"We had no pickup in April," says a producer at Pittsburgh, "and it looks like May will be even worse."

Canada . . .

Steel output in the first quarter of 1958 showed an improvement over that in the last quarter of 1957, H. G. Hilton, chairman, Steel Co. of Canada Ltd., Hamilton, Ont., told stockholders at the annual meeting.

"I cannot assure you this improvement will continue," he said. "It is, however, encouraging, and we are in an excellent position to profit from any general business upturn that may occur later this year."

Warehouse . . .

Warehouse Prices, Page 139

Distributors complain of slow business, despite a pickup in orders from the construction industry. Chances for improvement in overall bookings in the second quarter are not good.

Consensus among trade leaders is that the market will remain sluggish through the summer. Making a noticeable dent in warehouse business is the absence of buying by the larger customers who are getting tonnages from mills.

On a comparative basis, warehouse business so far this year has run like this: January, the best month; February, dipped perhaps 15 per cent; March, rose 10 per cent; and April, dropping to about the February level.

Some price shading has been

Ask Standard

how to cut costs with conveyors



Parallel roller conveyor lines facilitate movement of large molds to pouring area. Note simple right angle transfer device.

Job-tailored conveyor systems speed, simplify foundry work

GOOD foundry practice requires smooth handling of molds and cores to reduce losses due to "shifting" or "collapse".

This can be achieved with Standard Gravity Roller and Power Conveyors. Standard's 50 years experience in engineering and manufac-

turing foundry conveyors can be valuable to you.

Before you embark on any modernization program it will pay you to call STANDARD CONVEYOR COMPANY, General Offices, North St. Paul 9, Minn. Sales and Service in Principal cities.



Steel foundries handle cumbersome molds easily on simple low cost roller conveyors. Special design shielded bearings for rough foundry use give longer life, low maintenance.



Send for Standard's special catalog — a valuable reference book illustrating and describing various conveyor installations in leading foundries. Ask for "Conveyors for Foundries — IR." Address Dept. Y-5

Standard

GRAVITY & POWER
CONVEYORS

50 years
of conveyor
experience

Sales and Service in Principal Cities.

A trainee taught us some ABC's



At a briefing of trainees one of the boys asked: "Can I buy U. S. Savings Bonds through the Company and have my deductions made automatically?" Frankly we had assumed that all of our employees knew all about the Payroll Savings Plan.

As a matter of fact, we've had the Plan in operation here for years. We decided to make sure that *everyone* on our payroll got full information, right away.

Our State Savings Bond Director saw to it that we got a full stock of promotional material to stimulate interest in U. S. Savings Bonds. After that he helped us to conduct a personal canvass and give everyone an application blank.

What happened next was surprising. Our employee participation jumped to a really substantial percentage. When our people had all the facts they were glad to gain the security that U. S. Savings Bonds offer them.

Today there are more Payroll savers than ever before in peacetime. Your State Director will be happy to help you install a Payroll Savings Plan or build enrollment in one already existing. Look him up in the phone book or write: Savings Bonds Division, U. S. Treasury Dept., Washington, D. C.



THE U. S. GOVERNMENT DOES NOT PAY FOR THIS ADVERTISEMENT. THE TREASURY DEPARTMENT THANKS, FOR THEIR PATRIOTIC DONATION, THE ADVERTISING COUNCIL AND THE DONOR ABOVE.

noted in the Chicago district, chiefly by modification of extras. Some orders have been booked for 30,000-lb lots, for instance, at the price published for 5000-lb lots. Texas warehouses are finding imported steel much more than just a painful thorn in a salesman's side. Importers are making their biggest gains in the best markets—small shapes, reinforcing bars, and small sized wide flange beams.

Structural Shapes . . .

Structural Shape Prices, Page 134

Contracts for fabricated structural steel are picking up in the East. More tonnage is being estimated, which is an encouraging development because bookings are 30 to 35 per cent under those in the first four months of last year.

Shipments are in excess of new business, resulting in a steady drain of fabricators' backlogs. The situation is showing up in sharp competition for new jobs, including easier prices. Bridgework, accounting for the bulk of the increase in inquiry, frequently attracts bids from 35 to 40 suppliers of structural, reinforcing, piling, railing, deck, and other steel.

Reflecting the highly competitive situation on the West Coast, the U. S. Engineer at Portland, Oreg., received 54 bids for furnishing 41 steel stoplogs and lifting beams for Bonneville Dam. The low tender was by H.&S. Marine Co., Muskegon, Mich., which bid \$11,326. The high bid was \$56,000.

With inventory liquidation still going on, fabricating shop buying is not keeping pace with the improved demand for structurals and other building steel.

At Buffalo, the seasonal pickup in construction requirements is providing about the only bright spot in the steel market at that point. Better orders for structurals, reinforcing bars, and other types of building steel are reported.

Thousands of tons of steel are going into California's expanding highway system. In northern California alone, about \$85 million in road awards is scheduled for this year. In the Pacific Northwest, Oregon takes rebids May 9 for twin highway spans across the Snake River near Ontario; the project involves 900 tons of shapes, 300 tons of reinforcing, and some piling.



THOMAS Wall Radial Drill

... for drilling plates,
angles and beam flanges
too heavy to punch

THIS new Thomas tool is a "must" for every structural fabricator who depends on production drilling. It's the Thomas Wall Radial, column-mounted... the handiest and most rugged tool of its kind you ever used!

Ask for Bulletin 320 now!

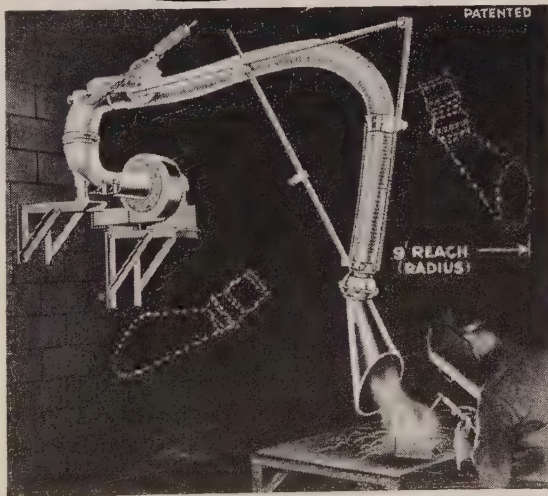
THOMAS
MACHINE MANUFACTURING COMPANY

PITTSBURGH 23, PA.

the trend is to THOMAS

in Punches • Shears • Presses • Spacing Tables • Benders

*"It certainly is a relief to have fumes
and heat removed while I'm welding.
The Ruemelin Collector has great suction.
It makes a day's work pleasanter!"*



Ruemelin Fume Collector in operation.

Welding shops equipped with Ruemelin Fume Collectors are assured of a clean shop atmosphere. Noxious fumes, heat and smoke are eliminated at their source, thus improving working conditions, lessening fatigue and paving the way for increased plant production.

The Ruemelin Fume Collector hood can be instantly placed where needed anywhere in the booth welding area. No tedious adjustments necessary. Just pull the inlet hood to the welding position and you are ready to go.

Note the new spring-loaded counterbalance mechanism which makes Fume Collector much easier to handle. Ask for Bulletin 37-E illustrating this new feature.

RUEMELIN MFG. CO.

MANUFACTURERS AND ENGINEERS
SAND BLAST AND DUST COLLECTING EQUIPMENT
3882 NORTH PALMER STREET • MILWAUKEE 12, WISCONSIN, U. S. A.

A 571R-14R

STRUCTURAL SHAPES . . .

STRUCTURAL STEEL PLACED

- 10,400 tons, 310 miles transmission towers, Fort Peck-Bismarck, N. Dak., Bureau of Reclamation, to Lipsett, Inc., New York.
- 1400 tons, seven highway and one railroad grade crossings, composite I-beam structures, Rochester, N. Y., Eastern Expressway, to Ernst Iron Works, Buffalo; Lane Construction Co., Meriden, Conn., general contractor.
- 1065 tons, pier freight terminal, Brooklyn, N. Y., to Grand Iron Works, New York; Nadel & Baxendale Inc., New York, general contractor.
- 850 tons, high school, Lawrence, N. Y., to Simon Holland & Sons, Brooklyn, N. Y.; Leon D. DeMatteis Construction Co., Elmont, N. Y., general contractor.
- 550 tons, 12-story apartment building, 315 East 70th St., New York, to Lieb Iron Works, New York.
- 530 tons, building, Castle Products Co., New Brunswick, N. J., to American Bridge Div., U. S. Steel Corp., Pittsburgh; Wigton-Abbott Corp., Plainfield, N. J., general contractor.
- 500 tons, including bars, public health service building, Atlanta, to Steel Inc., Scottdale, Ga. (structurals) and Joseph H. Fox & Co. Inc., Birmingham (reinforcing); Henry C. Beck Co., Atlanta, general contractor.
- 450 tons, boiler supports, Magna, Utah, to Mosher Steel Co., Houston; Combustion Engineering Inc., New York, contractor.
- 295 tons, generator development building No. 22, Philadelphia, General Electric Co. to Cantley & Co. Inc., Philadelphia.
- 200 tons, high school, Fairfax, Va., to Ross Iron Works, Richmond; English Construction Co., Alta Vista, Va., general contractor; 50 tons, reinforcing bars, Montague-Betts Co. Inc., Lynchburg, Va.
- 190 tons, Greenwood substation, Consolidated Edison Corp., Brooklyn, N. Y., to Grand Iron Works, New York.
- 130 tons, service bridge, Thomaston Dam, Connecticut, to United Fabricators Inc., New Haven; Oneglia & Gervasini Inc., Torrington, Conn., general contractor.
- 120 tons, elementary school, Roxbury District, Boston, to Hub Steel & Iron Works, Boston; James S. Kelliher Co., Quincy, Mass., general contractor.
- 110 tons, state highway bridge, Westchester County, New York, to White Plains Iron Works, White Plains, N. Y.
- 110 tons, terminal building, Jenney Mfg. Co., Chelsea, Mass., to A. O. Wilson Structural Co., Cambridge, Mass.
- 105 tons, state highway bridge FESS 58-18, Putnam County, New York, to Bethlehem Steel Co., Bethlehem, Pa.
- 100 tons, Pierce Island Bridge, Portsmouth, N. H., to Builders Iron Works, Somerville, Mass.

STRUCTURAL STEEL PENDING

- 3650 tons, (3215 tons girder spans) three grade separations and railroad bridge, relocation Route 35, New Haven, Conn.; Mariani Construction Co. Inc., New Haven, low, general contractor; also 615 tons, reinforcing bars and 300 tons, steel piles.
- 2700 tons, office building and post office, University Properties, Seattle; bids in.
- 2410 tons, state highway bridges, including two plate girder structures, Stroudsburg, Pa.; bids May 9, Harrisburg, Pa.
- 2000 tons, hangar 17, Idlewild Airport, Port of New York Authority, White Plains Iron Works, White Plains, N. Y., low.
- 975 tons, six state highway bridges, Wilmington, Mass.; Campanella & Cardi Construction Co., Hills Grove, R. I., low, general contract.
- 900 tons, also 300 tons of reinforcing and piling, twin bridges, Snake River, Oregon; bids to Portland, Oreg., May 9.
- 600 tons, 9-span steel stringer bridges (viaduct), North Adams, Mass.
- 200 tons, state highway bridges, Summit-Greene-Mill Creek townships, Pa.; bids May 9, Harrisburg, Pa.
- 150 tons, T-sections, General Stores Supply, Navy, Philadelphia; bids May 9.
- 115 tons, state highway bridges, I-beam, Greencastle-Mercersburg, Pa.; bids May 9, Harrisburg, Pa.; also 30 tons, reinforcing bars.

REINFORCING BARS . . .

REINFORCING BARS PLACED

- 1400 tons, elevated structures, Section P, J. F. Fitzgerald Expressway, Boston, to Truscon Steel Div., Republic Steel Corp., Boston; M. DeMatteo Construction Co., Quincy, Mass., general contractor.
- 760 tons, viaduct structures, FICBE 58-2, Contract 6, Cross Bronx Parkway, Bronx, N. Y., to Capitol Steel Co., New York; Slattery Contracting Co. Inc., Maspeth, N. Y., general contractor.
- 650 tons, hospital building, Worcester, Mass., to Bethlehem Steel Co., Bethlehem, Pa.; Park Construction Co., Boston, general contractor.
- 640 tons, state highway structures, Route 128, Braintree - Quincy - Randolph-Milton section, Massachusetts, to Northern Steel Inc., Medford, Mass.; Marinucci Bros. & Co. Inc., Boston, general contractor.
- 630 tons, state highway department building, Baton Rouge, La., to Southwest Steel Products Co., Kenner, La.; George A. Caldwell Construction Co., Baton Rouge, general contractor; 40 tons, structurals, Cosco Building Products, Baton Rouge.
- 500 tons, including structurals, men's dormitory, University of Cincinnati, Cincinnati, to Joseph T. Ryerson & Son Inc., Chicago, (reinforcing bars) and Engineering Metal Products Corp. (structurals); Frank Messer Inc., Cincinnati, general contractor.
- 380 tons, high school, Lawrence, N. Y., to United States Steel Supply Div., U. S. Steel Corp., New York; Leon D. DeMatteis Construction Co., Elmont, N. Y., general contractor.
- 345 tons, parochial high school, Peabody, Mass., to Bethlehem Steel Co., Bethlehem, Pa.; G. L. Rugo Co., Boston, general contractor.
- 220 tons, buildings, Merrimack College, North Andover, Mass., to Northern Steel Inc., Medford, Mass.; P. F. Beresford Co., Medford, Mass., general contractor.
- 258 tons, nuclear heat and power plant, Ft. Greely, Big Delta, Alaska, to Bethlehem Pacific Coast Steel Corp., Seattle; general contract to Peter Kiewit Sons Co., low at \$4,897,217.
- 200 tons, elementary school, Roxbury District, Boston, to United States Supply Div., U. S. Steel Corp., Boston; James S. Kelliher Co., Quincy, Mass., general contractor.
- 200 tons, Hanford Works project, to Soule Steel Co., Seattle; John P. Hopkins Co. Inc., Mercer Island, general contractor.
- 130 tons, language center building, Vassar College, Poughkeepsie, N. Y., to Fireproof Products, Inc., New York; Campbell Building Co., Poughkeepsie, general contractor.
- 75 tons, Everett Herald plant, Everett, Wash., to Bethlehem Pacific Coast Steel Corp., Seattle; George Teufel Co., Seattle, general contractor.

REINFORCING BARS PENDING

- 1250 tons, including 625 tons mesh, reinforced concrete highway and bridges, route L.R. 797 (7), Erie County, Pennsylvania; bids May 9, Harrisburg, Pa.
- 1145 tons, including 450 tons mesh, reinforced concrete highway and bridges, Stroudsburg-East Stroudsburg, Pa.; bids May 9, Harrisburg, Pa.
- 845 tons, highway and bridges, Route 101, section 2C, Morris County, New Jersey; bids May 13, Trenton, N. J.; also 85 tons, structural steel bearings.
- 365 tons, Tukey's Bridge, Portland, Maine; also 520 tons, steel H-piles and 1200 tons, fabricated structural steel.
- 250 tons, reinforced concrete arch bridge, Potash Brook, Russell, Mass.
- 140 tons, flood control structures, near Webster Square, Worcester, Mass.; Civitarese-Piatelli Construction Co., Hyde Park, Mass., low, general contract.
- 100 tons, flood control structures, Hammond-Cold Spring Brooks, Newton, Mass.
- 30 tons, also railing and miscellaneous, Skykomish River bridge, Washington state; general contract to Rasmussen Bros., Everett, Wash., by U. S. Forest Service.
- Unstated, twin spans, 981 ft long, Idaho state; bids to Boise, Idaho, May 13.
- Unstated, library building, Eugene, Oreg.; general contract to Gale Roberts Construction Co., Eugene, low at \$394,358.

- Unstated, three ammunition magazines and facilities, Glasgow Air Base, Montana; Sound Construction Co., Seattle, low at \$443,423 to U. S. Engineer, Walla Walla, Wash.
- Unstated, 364-ft highway pass, Portland Expressway; bids to Highway Commission, Portland, Oreg., May 9.
- Unstated, 13 buildings, Camp Adair, Oreg.; M. H. Shields, Eugene, Oreg., low at \$1,924,384 to U. S. Engineer, Portland, Oreg.
- Unstated, apron extension, Larson Air Field, Washington state; N. Florito Co. Inc., Seattle, low at \$1,173,985 to U. S. Engineer, Walla Walla, Wash.

PLATES . . .

PLATES PLACED

- 2140 tons, naval shipyard, Portsmouth, N. H., to the Lukens Steel Co., Coatesville, Pa. (1095 tons) and U. S. Steel Corp., Pittsburgh (1045 tons).
- 700 tons, General Stores Supply, Navy, Philadelphia, to the U. S. Steel Corp., Pittsburgh (230 tons), Kaiser Steel Co., New York (265 tons), and Bethlehem Steel Co., Bethlehem, Pa. (204 tons).
- 640 tons, 200,000 bbl. tanks, Paragon Oil Co., Newark, N. J., to Hammond Iron Works, Warren, Pa.
- 200 tons, molasses tank, Charles Pfizer & Co. Inc., Groton, Conn., to the Chicago Bridge & Iron Co., Chicago.
- 150 tons, five propane tanks, Connecticut Light & Power Co., Norwalk, Conn., to Norwalk Tank Co., Norwalk, Conn.
- 100 tons or more, two 200,000-gal standpipes for Pullman, Wash., reported placed with Hammond Iron Works, Provo, Utah.
- 100 tons, tank, Connecticut Light & Power Co., Vernon, Conn., to Chicago Bridge & Iron Co., Chicago.

PLATES PENDING

- 850 tons, 30-in. ½-in. thickness water pipe; bids to Port Townsend, Wash., May 6.
- 500 tons or more, four fuel tanks, Adak, Alaska, base; P.O.L. Contractors, Anchorage, Alaska, low at \$1,266,571 to 17th Naval District.
- 150 tons, medium black hull plates, General Stores Supply, Navy, Philadelphia.
- 135 tons, fuel oil tank, missile facility, AFB, Presque Isle, Maine; bids May 14, U. S. Engineer, Boston.
- 100 tons, self-propelled steel hull survey barge; U. S. Engineer, Boston.
- Unstated, refueling system, pumphouse, storage tanks, etc., Larson Air Base; Leslie Miller Inc., Ft. Worth, Tex., low at \$1,446,184 to U. S. Engineer, Walla Walla, Wash.
- Unstated, fuel storage, etc., Kingsley Air Base, Klamath Falls, Oreg.; general contract to Lloyd Johnson Co. and Morrison Knudsen Co., joint low, to 13th Naval District.

PIPE . . .

CAST IRON PIPE PENDING

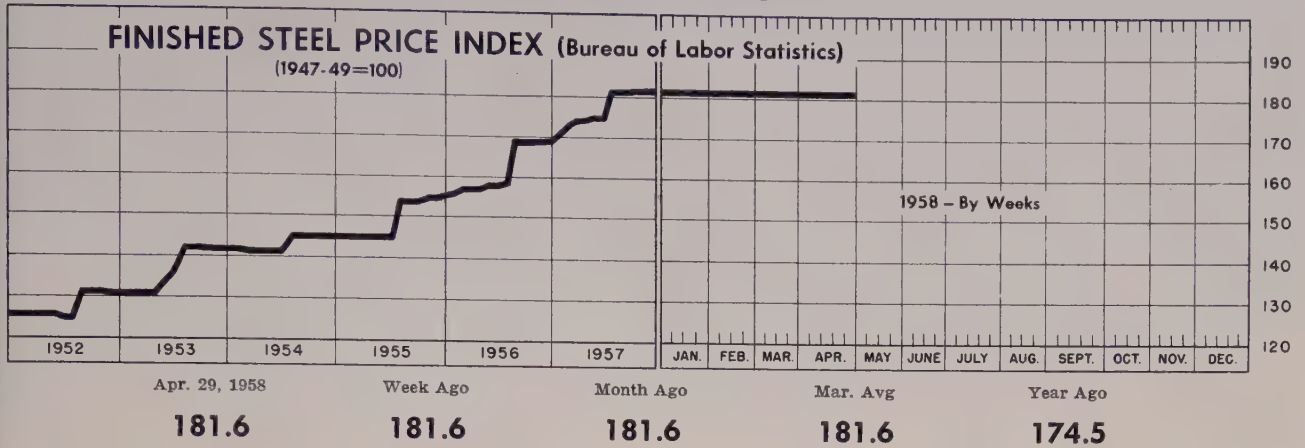
- 1400 tons, King County District No. 93, Mercer Island, Wash.; bids May 5; Carey & Kramer, Seattle, engineer.
- Unstated, 15,100 ft of 10 to 6 in., fittings and utilities, Mountain Home, Idaho; bids to U. S. Engineer, Walla Walla, Wash., May 20.
- Unstated, 3500 ft, 6 in. and fittings; bids to Port Orchard, Wash., Apr. 28.

RAILS, CARS . . .

RAILROAD CARS PLACED

- Florida East Coast, five 50-ton bulkhead flatcars to Thrall Car Mfg. Co., Chicago Heights, Ill.
- Northern Pacific, 25 forty-ft mechanical refrigerator cars to Pacific Car & Foundry Co., Renton, Wash.
- Norfolk & Western, 25 fifty-ton boxcars to Pullman-Standard Car & Mfg. Co., Chicago.
- Arthur Equipment Co., 15 seventy-ton hoppers to Thrall Car Mfg. Co., Chicago Heights, Ill.
- New England Transportation Co. (New Haven), 50 thirty-five-ft tandem trailers, piggyback operations, to Highway Trailer Co., Allston, Mass.

Price Indexes and Composites



AVERAGE PRICES OF STEEL (Bureau of Labor Statistics)

Week Ended Apr. 29

Prices include mill base prices and typical extras and deductions. Units are 100 lb except where otherwise noted in parentheses. For complete description of the following products and extras and deductions applicable to them, write to STEEL.

Rails, Standard No. 1 ...	\$5.600	Bars, Reinforcing	6.135
Rails, Light, 40 lb	7.067	Bars, C.F., Carbon	10.360
Flat Plates	6.600	Bars, C.F., Alloy	13.875
Axles, Railway	9.825	Bars, C.F., Stainless, 302 (lb)	0.553
Wheels, Freight Car, 33 in. (per wheel)	60.000	Sheets, H.R., Carbon	6.192
Plates, Carbon	6.150	Sheets, C.R., Carbon	7.089
Structural Shapes	5.942	Sheets, Galvanized	8.270
Bars, Tool Steel, Carbon (lb)	0.535	Sheets, C.R., Stainless, 302 (lb)	0.688
Bars, Tool Steel, Alloy, Oil Hardening Die (lb)	0.650	Sheets, Electrical	12.025
Bars, Tool Steel, H.R., Alloy, High Speed, W 6.75, Cr 4.5, V 2.1, Mo 5.5, C 0.60 (lb)	1.355	Strip, C.R., Carbon	9.243
Bars, Tool Steel, H.R., Alloy, High Speed, W18, Cr 4, V 1 (lb)	1.850	Strip, C.R., Stainless, 430 (lb)	0.493
Bars, H.R., Alloy	10.525	Strip, H.R., Carbon	6.095
Bars, H.R., Stainless, 303 (lb)	0.525	Pipe, Black, Butt-weld (100 ft)	19.814
Bars, H.R., Carbon	6.425	Pipe, Galv., Butt-weld (100 ft)	23.264
		Pipe, Line (100 ft)	199.023
		Casing, Oil Well, Carbon (100 ft)	194.499
		Casing, Oil Well, Alloy (100 ft)	304.610

Tubes, Boiler (100 ft) ...	49.130	Black Plate, Canmaking Quality (95 lb base box)	7.583
Tubing, Mechanical, Carbon (100 ft)	24.953	Wire, Drawn, Carbon	10.225
Tubing, Mechanical, Stainless, 304 (100 ft)	205.608	Wire, Drawn, Stainless, 430 (lb)	0.653
Tin Plate, Hot-dipped, 1.25 lb (95 lb base box)	9.783	Bale Ties (bundles)	7.967
Tin Plate, Electrolytic, 0.25 lb (95 lb base box) ..	8.483	Nails, Wire, 8d Common ..	9.828
		Wire, Barbed (80-rod spool) ..	8.719
		Woven Wire Fence (20-rod roll)	21.737

STEEL'S FINISHED STEEL PRICE INDEX*

	Apr. 30 1958	Week Ago	Month Ago	Year Ago	5 Yr Ago
Index (1935-39 avg=100) ..	239.15	239.15	239.15	228.59	181.31
Index in cents per lb	6.479	6.479	6.479	6.193	4.912

STEEL'S ARITHMETICAL PRICE COMPOSITES*

Finished Steel, NT	\$145.42	\$145.42	\$145.42	\$140.24	\$110.98
No. 2 Fdry Pig Iron, GT ..	66.49	66.49	66.49	64.70	55.04
Basic Pig Iron, GT	65.99	65.99	65.99	64.23	54.66
Malleable Pig Iron, GT ...	67.27	67.27	67.27	65.77	55.77
Steelmaking Scrap, GT ...	31.83	32.83	34.33	43.67	41.67

*For explanation of weighted index see STEEL, Sept. 19, 1949, p. 54; of arithmetical price composite, STEEL, Sept. 1, 1952, p. 130.

Comparison of Prices

Comparative prices by districts, in cents per pound except as otherwise noted. Delivered prices based on nearest production point.

FINISHED STEEL						PIG IRON, Gross Ton					
	Apr. 30 1958	Week Ago	Month Ago	Year Ago	5 Yr Ago		Apr. 30 1958	Week Ago	Month Ago	Year Ago	5 Yr Ago
Bars, H.R., Pittsburgh	5.425	5.425	5.425	5.075	3.95	Bessemer, Pitts.	\$67.00	\$67.00	\$67.00	\$65.50	\$55.50
Bars, H.R., Chicago	5.425	5.425	5.425	5.075	3.95	Basic, Valley	66.00	66.00	66.00	64.50	54.50
Bars, H.R., deld. Philadelphia ..	5.725	5.725	5.725	5.365	4.502	Basic, deld., Phila.	70.41	70.41	70.41	68.38	59.25
Bars, C.F., Pittsburgh	7.30*	7.30*	7.30*	6.85*	4.925	No. 2 Fdry, NevilleIsland, Pa.	66.50	66.50	66.50	65.00	55.00
Shapes, Std., Pittsburgh	5.275	5.275	5.275	5.00	3.85	No. 2 Fdry, Chicago	66.50	66.50	66.50	65.00	55.00
Shapes, Std., Chicago	5.275	5.275	5.275	5.00	3.85	No. 2 Fdry, deld., Phila. ...	70.91	70.91	70.91	68.88	59.75
Shapes, deld., Philadelphia	5.545	5.545	5.545	5.31	4.13	No. 2 Fdry, Birm.	62.50	62.50	62.50	59.00	51.38
Plates, Pittsburgh	5.10	5.10	5.10	4.85	3.90	No. 2 Fdry (Birm.) deld. Cin.	70.20	70.20	70.20	66.70	58.93
Plates, Chicago	5.10	5.10	5.10	4.85	3.90	Malleable, Valley	66.50	66.50	66.50	65.00	55.00
Plates, Coatesville, Pa.	5.10	5.10	5.10	5.25	4.35	Malleable, Chicago	66.50	66.50	66.50	65.00	55.00
Plates, Sparrows Point, Md.	5.10	5.10	5.10	4.85	3.90	Ferromanganese, Duquesne.	245.00†	245.00†	245.00†	255.00†	228.00*
Plates, Claymont, Del.	5.10	5.10	5.10	5.70	4.35	†74-76% Mn, net ton. *75-82% Mn, gross ton, Etna, Pa.					
Sheets, H.R., Pittsburgh	4.925	4.925	4.925	4.675	3.775	SCRAP, Gross Ton (Including broker's commission)					
Sheets, H.R., Chicago	4.925	4.925	4.925	4.675	3.775	No. 1 Heavy Melt, Pittsburgh ..	\$31.50	\$32.50	\$33.50	\$41.50	\$43.00
Sheets, C.R., Pittsburgh	6.05	6.05	6.05	5.75	4.575	No. 1 Heavy Melt, E. Pa. ..	34.50	36.00	38.50	48.00	42.50
Sheets, C.R., Chicago	6.05	6.05	6.05	5.75	4.575	No. 1 Heavy Melt, Chicago.	29.50	30.00	31.00	39.50	39.50
Sheets, C.R., Detroit	6.05-6.15	6.05-6.15	6.05-6.15	5.75-5.85	4.775	No. 1 Heavy Melt, Valley ..	32.50	32.50	33.50	41.50	43.50
Sheets, Galv., Pittsburgh	6.80	6.80	6.80	6.30	5.075	No. 1 Heavy Melt, Cleve. ..	29.50	29.50	30.50	38.50	41.25
Strip, H.R., Pittsburgh	4.925	4.925	4.925	4.675	3.975-4.225	No. 1 Heavy Melt, Buffalo.	26.50	26.50	28.50	41.50	43.50
Strip, H.R., Chicago	4.925	4.925	4.925	4.675	3.725	Rails, Rerolling, Chicago ..	48.50	52.00	54.50	56.50	51.50
Strip, C.R., Pittsburgh	7.15	7.15	7.15	6.85	5.10-5.80	No. 1 Cast, Chicago	38.50	38.50	41.50	39.50	42.50
Strip, C.R., Chicago	7.15	7.15	7.15	6.85	5.35						
Strip, C.R., Detroit	7.25	7.25	7.25	6.95	5.30-6.05						
Wire, Basic, Pittsburgh	7.65	7.65	7.65	7.20	5.225-5.475						
Nails, Wire, Pittsburgh	8.95	8.95	8.95	8.49	6.35						
Tin plate (1.50 lb) box, Pitts.	\$10.30	\$10.30	\$10.30	\$10.30	\$8.95						

*Including 0.35c for special quality.

SEMIFINISHED STEEL

Billets, forging, Pitts. (NT) ..	\$96.00	\$96.00	\$96.00	\$91.50	\$70.50
Wire rods, 3/4"-5/8" Pitts.	6.15	6.15	6.15	5.80	4.425

COKE, Net Ton

Beehive, Furn., Connsvl.	\$15.25	\$15.25	\$15.25	\$15.25	\$14.75
Beehive, Fdry., Connsvl.	18.25	18.25	18.25	18.00	17.00

Steel Prices

Mill prices as reported to STEEL, Apr. 30, cents per pound except as otherwise noted. *Changes shown in italics.*
Code numbers following mill points indicate producing company. Key to producers, page 135 to footnotes, page 137.

SEMI-FINISHED

INGOTS, Carbon, Forging (NT)	
Munhall, Pa. U5	.....\$73.50
INGOTS, Alloy (NT)	
Detroit S41	.....\$77.00
Farrell, Pa. S3	.....77.00
Lowellville, O. S3	.....77.00
Midland, Pa. C18	.....77.00
Munhall, Pa. U5	.....77.00
Sharon, Pa. S3	.....77.00

BILLETS, BLOOMS & SLABS	
Carbon, Re-rolling (NT)	
Bessemer, Pa. U5	.....\$77.50
Buffalo R2	.....77.50
Clairton, Pa. U5	.....77.50
Ensley, Ala. T2	.....77.50
Fairfield, Ala. T2	.....77.50
Fontana, Calif. K1	.....88.00
Gary, Ind. U5	.....77.50
Johnstown, Pa. B3	.....77.50
Lackawanna, N.Y. B2	.....77.50
Munhall, Pa. U5	.....77.50
Owensboro, Ky. G8	.....77.50
S. Chicago, Ill. R2, U5	.....77.50
S. Duquesne, Pa. U5	.....77.50
Sterling, Ill. N15	.....77.50
Youngstown R2	.....77.50

Carbon, Forging (NT)	
Bessemer, Pa. U5	.....\$96.00
Buffalo R2	.....96.00
Canton, O. R2	.....95.50
Clairton, Pa. U5	.....96.00
Conshohocken, Pa. A3	.....101.00
Ensley, Ala. T2	.....96.00
Fairfield, Ala. T2	.....96.00
Fontana, Calif. K1	.....105.50
Gary, Ind. U5	.....96.00
Geneva, Utah C11	.....96.00
Houston S5	.....101.00
Johnstown, Pa. B2	.....96.00
Lackawanna, N.Y. B2	.....96.00
Los Angeles B3	.....105.50
Midland, Pa. C18	.....96.00
Munhall, Pa. U5	.....96.00
Owensboro, Ky. G8	.....96.00
Seattle B3	.....109.50
Sharon, Pa. S3	.....96.00
S. Chicago R2, U5, W14	.....96.00
S. Duquesne, Pa. U5	.....96.00
S. San Francisco B3	.....105.50
Warren, O. C17	.....96.00

Alloy, Forging (NT)	
Bethlehem, Pa. B2	.....\$114.00
Bridgeport, Conn. C32	.....114.00
Buffalo R2	.....114.00
Canton, O. R2, T7	.....114.00
Conshohocken, Pa. A3	.....121.00
Detroit S41	.....114.00
Economy, Pa. B14	.....114.00
Farrell, Pa. S3	.....114.00
Fontana, Calif. K1	.....135.00
Gary, Ind. U5	.....114.00
Houston S5	.....119.00
Ind. Harbor, Ind. Y1	.....114.00
Johnstown, Pa. B2	.....114.00
Lackawanna, N.Y. B2	.....114.00
Los Angeles B3	.....134.00
Lowellville, O. S3	.....114.00
Massillon, O. R2	.....114.00
Midland, Pa. C18	.....114.00
Munhall, Pa. U5	.....114.00
Owensboro, Ky. G8	.....114.00
Sharon, Pa. S3	.....114.00
S. Chicago R2, U5, W14	.....114.00
S. Duquesne, Pa. U5	.....114.00
Struthers, O. Y1	.....114.00
Warren, O. C17	.....114.00

ROUNDS, SEAMLESS TUBE (NT)	
Buffalo R2	.....\$117.50
Canton, O. R2	.....120.00
Cleveland R2	.....117.50
Gary, Ind. U5	.....117.50
S. Chicago, Ill. R2, W14	.....117.50
S. Duquesne, Pa. U5	.....117.50
Warren, O. C17	.....117.50

SKELP	
Aliquippa, Pa. J5	.....5.075
Munhall, Pa. U5	.....4.875
Pittsburgh J5	.....5.075
Warren, O. R2	.....4.875
Youngstown R2, U5	.....4.875

WIRE RODS	
Alabama City, Ala. R2	.....6.15
Aliquippa, Pa. J5	.....6.15
Alton, Ill. L1	.....6.35
Buffalo W12	.....6.15
Cleveland A7	.....6.15
Donora, Pa. A7	.....6.15
Fairfield, Ala. T2	.....6.15
Houston S5	.....6.40
Indiana Harbor, Ind. Y1	.....6.15
Johnstown, Pa. B2	.....6.15
Joliet, Ill. A7	.....6.15
Kansas City, Mo. S5	.....6.40
Kokomo, Ind. C16	.....6.25
Los Angeles B3	.....6.95
Minnequa, Colo. C10	.....6.40

Monessen, Pa. P7	.....6.15
N. Tonawanda, N.Y. B11	.....6.15
Pittsburgh, Calif. C11	.....6.95
Portsmouth, O. P12	.....6.15
Roebing, N.J. R5	.....6.25
S. Chicago, Ill. R2	.....6.15
Sparrows Point, Md. B2	.....6.25
Sterling, Ill. (1) N15	.....6.15
Sterling, Ill. N15	.....6.25
Struthers, O. Y1	.....6.15
Worcester, Mass. A7	.....6.45

STRUCTURALS

Carbon Steel Std. Shapes	
Alabama City, Ala. R2	.....5.275
Atlanta A11	.....5.475
Aliquippa, Pa. J5	.....5.275
Bessemer, Ala. T2	.....5.275
Bethlehem, Pa. B2	.....5.325
Birmingham C15	.....5.275
Clairton, Pa. U5	.....5.275
Fairfield, Ala. T2	.....5.275
Fontana, Calif. K1	.....6.075
Gary, Ind. U5	.....5.275
Geneva, Utah C11	.....5.275
Houston S5	.....5.375
Ind. Harbor, Ind. I-2	.....5.275
Johnstown, Pa. B2	.....5.325
Joliet, Ill. P22	.....5.275
Kansas City, Mo. S5	.....5.375
Lackawanna, N.Y. B2	.....5.325
Los Angeles B3	.....5.975
Minnequa, Colo. C10	.....5.575
Munhall, Pa. U5	.....5.275
Niles, Calif. P1	.....5.925
Phoenixville, Pa. P4	.....5.325
Portland, Ore. O4	.....6.025
Seattle B3	.....6.025
S. Chicago, Ill. U5, W14	.....5.275
S. San Francisco B3	.....5.925
Sterling, Ill. N15	.....5.275
Torrance, Calif. C11	.....5.975
Weirton, W. Va. W6	.....5.275

Wide Flange	
Bethlehem, Pa. B2	.....5.325
Clairton, Pa. U5	.....5.275
Fontana, Calif. K1	.....6.225
Indiana Harbor, Ind. I-2	.....5.275
Lackawanna, N.Y. B2	.....5.325
Munhall, Pa. U5	.....5.275
Phoenixville, Pa. P4	.....5.325
S. Chicago, Ill. U5	.....5.275
Weirton, W. Va. W6	.....5.275

Alloy Std. Shapes	
Aliquippa, Pa. J5	.....6.55
Clairton, Pa. U5	.....6.55
Gary, Ind. U5	.....6.55
Houston S5	.....6.65
Kansas City, Mo. S5	.....6.65
Munhall, Pa. U5	.....6.55
S. Chicago, Ill. U5	.....6.55

H.S., L.A. Std. Shapes	
Aliquippa, Pa. J5	.....7.75
Bessemer, Ala. T2	.....7.75
Bethlehem, Pa. B2	.....7.80
Clairton, Pa. U5	.....7.75
Fairfield, Ala. T2	.....7.75
Fontana, Calif. K1	.....8.55
Gary, Ind. U5	.....7.75
Geneva, Utah C11	.....7.75
Houston S5	.....7.85
Ind. Harbor, Ind. I-2, Y1	.....7.75
Johnstown, Pa. B2	.....7.80
Kansas City, Mo. S5	.....7.85
Lackawanna, N.Y. B2	.....7.80
Los Angeles B3	.....8.45
Munhall, Pa. U5	.....7.75
Seattle B3	.....8.50
S. Chicago, Ill. U5, W14	.....7.75
S. San Francisco B3	.....8.40
Struthers, O. Y1	.....7.75

H.S., L.A. Wide Flange	
Bethlehem, Pa. B2	.....7.80
Lackawanna, N.Y. B2	.....7.80
Munhall, Pa. U5	.....7.75
S. Chicago, Ill. U5	.....7.75

PILING

BEARING PILES	
Bethlehem, Pa. B2	.....5.325
Lackawanna, N.Y. B2	.....5.325
Munhall, Pa. U5	.....5.275
S. Chicago, Ill. U5	.....5.275

STEEL SHEET PILING	
Lackawanna, N.Y. B2	.....6.225
Munhall, Pa. U5	.....6.225
S. Chicago, Ill. U5	.....6.225
Weirton, W. Va. W6	.....6.225

PLATES

PLATES, Carbon Steel	
Alabama City, Ala. R2	.....5.10
Aliquippa, Pa. J5	.....5.10
Alton, Ill. L1	.....5.10
Ashland, Ky. (15) A10	.....5.10
Atlanta A11	.....5.30
Bessemer, Ala. T2	.....5.10
Clairton, Pa. U5	.....5.10
Claymont, Del. C22	.....5.10

Cleveland J5, R2	.....5.20
Coatesville, Pa. L7	.....5.10
Conshohocken, Pa. A3	.....5.20
Ecorse, Mich. G5	.....5.20
Fairfield, Ala. T2	.....5.10
Fontana, Calif. (30) K1	.....5.90
Gary, Ind. U5	.....5.10
Geneva, Utah C11	.....5.10
Granite City, Ill. G4	.....5.30
Harrisburg, Pa. P4	.....5.10
Houston S5	.....5.20
Ind. Harbor, Ind. I-2, Y1	.....5.10
Johnstown, Pa. B2	.....5.10
Lackawanna, N.Y. B2	.....5.10
Lone Star, Tex. L6	.....5.20
Mansfield, O. E6	.....5.10
Minnequa, Colo. C10	.....5.95
Munhall, Pa. U5	.....5.10
Newport, Ky. A2	.....5.10
Pittsburgh J5	.....5.10
Riverdale, Ill. A1	.....5.10
Seattle B3	.....6.00
Sharon, Pa. S3	.....5.10
S. Chicago, Ill. U5, W14	.....5.10
Sparrows Point, Md. B2	.....5.10
Sterling, Ill. N15	.....5.10
Steuenville, O. W10	.....5.10
Warren, O. R2	.....5.10
Youngstown U5, Y1	.....5.10

PLATES, Carbon Abras. Resist.	
Claymont, Del. C22	.....6.75
Fontana, Calif. K1	.....7.55
Geneva, Utah C11	.....6.75
Houston S5	.....6.85
Johnstown, Pa. B2	.....6.75
Sparrows Point, Md. B2	.....6.75

PLATES, Wrought Iron	
Economy, Pa. B14	.....13.15

PLATES, H.S., L.A.	
Aliquippa, Pa. J5	.....7.625
Bessemer, Ala. T2	.....7.625
Clairton, Pa. U5	.....7.625
Claymont, Del. C22	.....7.625
Cleveland J5, R2	.....7.625
Coatesville, Pa. L7	.....7.625
Conshohocken, Pa. A3	.....7.625
Economy, Pa. B14	.....7.625
Ecorse, Mich. G5	.....7.725
Fairfield, Ala. T2	.....7.625
Farrell, Pa. S3	.....7.625
Fontana, Calif. (30) K1	.....8.425
Gary, Ind. U5	.....7.625
Geneva, Utah C11	.....7.625
Houston S5	.....7.725
Ind. Harbor, Ind. I-2, Y1	.....7.625
Johnstown, Pa. B2	.....7.625
Munhall, Pa. U5	.....7.625
Pittsburgh J5	.....7.625
Seattle B3	.....8.525
Sharon, Pa. S3	.....7.625
S. Chicago, Ill. U5, W14	.....7.625
Sparrows Point, Md. B2	.....7.625
Warren, O. R2	.....7.625
Youngstown U5	.....7.625

PLATES, ALLOY	
Aliquippa, Pa. J5	.....7.20
Claymont, Del. C22	.....7.20
Coatesville, Pa. L7	.....7.20
Fontana, Calif. K1	.....8.00
Gary, Ind. U5	.....7.20
Houston S5	.....7.30
Ind. Harbor, Ind. Y1	.....7.20
Johnstown, Pa. B2	.....7.20
Lowellville, O. S3	.....7.20
Munhall, Pa. U5	.....7.20
Newport, Ky. A2	.....7.20
Pittsburgh J5	.....7.20
Seattle B3	.....8.10
Sharon, Pa. S3	.....7.20
S. Chicago, Ill. U5, W14	.....7.20
Sparrows Point, Md. B2	.....7.20
Youngstown Y1	.....7.20

FLOOR PLATES	
Cleveland J5	.....6.175
Conshohocken, Pa. A3	.....6.175
Ind. Harbor, Ind. I-2	.....6.175
Munhall, Pa. U5	.....6.175
S. Chicago, Ill. U5	.....6.175

PLATES, Ingot Iron	
Ashland c.l. (15) A10	.....5.35
Ashland l.c.l. (15) A10	.....5.85
Cleveland c.l. R2	.....5.85
Warren, O. c.l. R2	.....5.85

BARS

BARS, Hot-Rolled Carbon (Merchant Quality)	
Ala. City, Ala. (9) R2	.....5.425
Aliquippa, Pa. (9) J5	.....5.425
Alton, Ill. L1	.....5.625
Atlanta (9) A11	.....5.625
Bessemer, Ala. (9) T2	.....5.425
Birmingham (9) C15	.....5.425
Buffalo (9) R2	.....5.425
Clairton, Pa. (9) U5	.....5.425

Cleveland (9) R2	.....5.425
Ecorse, Mich. (9) G5	.....5.525
Emeryville, Calif. J7	.....6.175
Fairfield, Ala. (9) T2	.....5.425
Fairless, Pa. (9) U5	.....5.575
Fontana, Calif. (9) K1	.....6.125
Gary, Ind. (9) U5	.....5.425
Houston (9) S5	.....5.675
Ind. Harbor (9) I-2, Y1	.....5.425
Johnstown, Pa. (9) B2	.....5.425
Joliet, Ill. P22	.....5.425
Kansas City, Mo. (9) S5	.....5.675
Lackawanna (9) B2	.....5.425
Los Angeles (9) B3	.....6.125
Midland, Pa. (23) C18	.....5.725
Milton, Pa. M18	.....5.575
Minnequa, Colo. C10	.....5.875
Niles, Calif. P1	.....6.125
N. T'wanda, N.Y. (23) B115	.....7.75
Owensboro, Ky. (9) G8	.....5.425
Pittsburgh, Calif. (9) C11	.....6.125
Pittsburgh (9) J5	.....5.425
Portland, Ore. O4	.....6.175
S. Chicago (9) R2	.....6.175
S. C'h'go (9) R2, U5, W14	.....5.425
S. Duquesne, Pa. (9) U5	.....5.425
S. San Fran., Calif. (9) B3	.....6.175
Sterling, Ill. (1) (9) N15	.....5.425
Sterling, Ill. (9) N15	.....5.525
Struthers, O. (9) Y1	.....5.425
Tonawanda, N.Y. B12	.....5.425
Torrance, Calif. (9) C11	.....6.125
Youngstown (9) R2, U5	.....5.425

BARS, H.R. Leaded Alloy (Including leaded extra)	
Warren, O. C17	.....7.475

BARS, Hot-Rolled Alloy	
Aliquippa, Pa. J5	6.47
Bethlehem, Pa. B2	6.47
Bridgeport, Conn. C32	6.55
Buffalo R2	6.47
Canton, O. R2, T7	6.47
Clairton, Pa. U5	6.47
Detroit S41	6.47
Economy, Pa. B14	6.47
Ecorse, Mich. G5	6.50
Fairless, Pa. U5	6.62
Farrell, Pa. S3	6.47
Fontana, Calif. K1	7.52
Gary, Ind. U5	6.47
Houston S5	6.72
Ind. Harbor, Ind. I-2, Y1	6.47
Johnstown, Pa. B2	6.47
Kansas City, Mo. S5	6.72
Lackawanna, N.Y. B2	6.47
Lowellville, O. S3	6.47
Los Angeles B3	7.52
Massillon, O. R2	6.47
Midland, Pa. C18	6.47
Owensboro, Ky. G8	6.47
Pittsburgh J5	6.47
Sharon, Pa. S3	6.47
S. Chicago R2, U5, W14	6.47
S. Duquesne, Pa. U5	6.47
Struthers, O. Y1	6.47
Warren, O. C17	6.47
Youngstown U5	6.47

RS, Reinforcing (To Fabricators)		
Alabama City, Ala.	R2	5.425
Atlanta A11		5.425
Birmingham C15		5.425
Buffalo R2		5.425
Cleveland R2		5.425
Ecorse, Mich. G5		5.775
Emeryville, Calif. J7		6.175
Fairfield, Ala. T2		5.425
Fairless, Pa. U5		5.575
Fontana, Calif. K1		6.125
Fort Worth, Tex. (4) (26) T4		5.875
Gary, Ind. U5		5.425
Houston S5		5.675
Ind. Harbor, Ind. I-2, Y1		5.425
Johnstown, Pa. B2		5.425
Liberty, Ill. P22		5.425
Massachusetts City, Mo. S5		5.675
Kokomo, Ind. C16		5.525
Lackawanna, N.Y. B2		5.425
Niles, Angeles B3		6.125
Portland, Pa. M18		5.575
Portneue, Colo. C10		5.875
Rocky, Calif. P1		6.125
Pittsburgh, Calif. C11		6.125
Pittsburgh J5		5.425
Portland, Ore. O4		6.175
Sand Springs, Okla. S5		5.425
Seattle B3, N14		6.175
Chicago, Ill. R2		5.425
San Francisco B3		6.175
Sparrows Pt., Md. B2		5.425
Terling, Ill. (1) N15		5.425
Terling, Ill. N15		5.425
Truthers, O. Y1		5.425
Tonawanda, N.Y. B12		6.00
Torrance, Calif. C11		6.125
Youngstown R2, U5		5.425

RS, Reinforcing (Fabricated to Consumers)		
Boston B2, U8		7.65
Chicago U8		6.91
Cleveland U8		6.89
Houston S5		7.35
Johnstown, Pa. B2		7.08
Kansas City, Mo. S5		7.35
Lackawanna, N.Y. B2		6.85
Marion, O. P11		6.70
Newark, N.J. U8		7.55
Philadelphia U8		7.38
Pittsburgh J5, U8		7.10
Sand Springs, Okla. S5		7.60
Seattle B3, N14		7.70
Sparrows Pt., Md. B2		7.08
St. Paul U8		7.92
Williamsport, Pa. S19		7.00

RS, Wrought Iron		
Economy, Pa. (S.R.) B14		14.45
Economy, Pa. (D.R.) B14		18.00
Economy, (Staybolt) B14		18.45

RAIL STEEL BARS		
Chicago Hts. (3) C2		I-2.5.325
Chicago Hts. (4) (44) I-2.5.325		
Chicago Hts. (4) C2		5.425
Franklin, Pa. (3) F5		5.325
Franklin, Pa. (4) F5		5.325
Jersey Shore, Pa. (3) J8		5.30
Marion, O. (3) P11		5.325
Tonawanda (3) B12		5.325
Tonawanda (4) B12		6.00
Williamsport, Pa. (3) S19		5.50

SHEETS

SHEETS, Hot-Rolled Steel (18 Gage and Heavier)		
Alabama City, Ala. R2		4.925
Allentown, Pa. P7		4.925
Ashland, Ky. (8) A10		4.925
Cleveland J5, R2		4.925
Conshohocken, Pa. A3		4.975
Detroit (8) M1		5.025
Ecorse, Mich. G5		5.025
Fairfield, Ala. T2		4.925
Fairless, Pa. U5		4.975
Fontana, Calif. K1		5.675
Gary, Ind. U5		4.925
Geneva, Utah C11		5.025
Granite City, Ill. (8) G4		5.125
Ind. Harbor, Ind. I-2, Y1		4.925
Irvin, Pa. U5		4.925
Lackawanna, N.Y. B2		4.925
Mansfield, O. E6		4.925
Munhall, Pa. U5		4.925
Newport, Ky. (8) A2		4.925
Niles, O. M21, S3		4.925
Pittsburgh, Calif. C11		5.625
Pittsburgh J5		4.925
Portsmouth, O. P12		4.925
Riverdale, Ill. A1		4.925
Sharon, Pa. S3		4.925
S. Chicago, Ill. W14		4.925
Sparrows Point, Md. B2		4.925
Steubenville, O. W10		4.925
Warren, O. R2		4.925
Weirton, W. Va. W6		4.925
Youngstown U5, Y1		4.925

SHEETS, H.R. (19) Ga. & Lighter		
Niles, O. M21		6.05

SHEETS, H.R. Alloy		
Gary, Ind. U5		8.10
Ind. Harbor, Ind. Y1		8.10
Irvin, Pa. U5		8.10
Munhall, Pa. U5		8.10
Newport, Ky. A2		8.10
Youngstown U5, Y1		8.10

SHEETS, H.R. (14 Ga. & Heavier) High-Strength, Low-Alloy		
Cleveland J5, R2		7.275
Conshohocken, Pa. A3		7.325
Ecorse, Mich. G5		7.375
Fairfield, Ala. T2		7.275
Fairless, Pa. U5		7.325
Farrell, Pa. S3		7.275
Fontana, Calif. K1		8.025
Gary, Ind. U5		7.275
Ind. Harbor, Ind. I-2, Y1		7.275
Irvin, Pa. U5		7.275
Lackawanna (35) B2		7.275
Munhall, Pa. U5		7.275
Pittsburgh J5		7.275
S. Chicago, Ill. U5, W14		7.275
Sharon, Pa. S3		7.275
Sparrows Point (36) B2		7.275
Warren, O. R2		7.275
Weirton, W. Va. W6		7.275
Youngstown U5, Y1		7.275

SHEETS, Hot-Rolled Ingot Iron (18 Gage and Heavier)		
Ashland, Ky. (8) A10		5.175
Cleveland R2		5.675
Warren, O. R2		5.675

SHEETS, Cold-Rolled Ingot Iron		
Cleveland R2		6.80
Middletown, O. A10		6.55
Warren, O. R2		6.80

SHEETS, Cold-Rolled Steel (Commercial Quality)		
Alabama City, Ala. R2		6.05
Allentown, Pa. P7		6.05
Cleveland J5, R2		6.05
Conshohocken, Pa. A3		6.10
Detroit M1		6.05
Ecorse, Mich. G5		6.15
Fairfield, Ala. T2		6.05
Fairless, Pa. U5		6.10
Follansbee, W. Va. F4		6.05
Fontana, Calif. K1		7.30
Gary, Ind. U5		6.05
Granite City, Ill. G4		6.25
Ind. Harbor, Ind. I-2, Y1		6.05
Irvin, Pa. U5		6.05
Lackawanna, N.Y. B2		6.05
Mansfield, O. E6		6.05
Middletown, O. A10		6.05
Newport, Ky. A2		6.05
Pittsburgh, Calif. C11		7.00
Pittsburgh J5		6.05
Portsmouth, O. P12		6.05
Sparrows Point, Md. B2		6.05
Steubenville, O. W10		6.05
Warren, O. R2		6.05
Weirton, W. Va. W6		6.05
Yorkville, O. W10		6.05
Youngstown Y1		6.05

SHEETS, Cold-Rolled, High-Strength, Low Alloy		
Cleveland J5, R2		8.975
Ecorse, Mich. G5		9.075
Fairless, Pa. U5		9.025
Fontana, Calif. K1		10.275
Gary, Ind. U5		8.975
Indiana Harbor, Ind. Y1		8.975
Irvin, Pa. U5		8.975
Lackawanna (37) B2		8.975
Pittsburgh J5		8.975
Sparrows Point (38) B2		8.975
Warren, O. R2		8.975
Weirton, W. Va. W6		8.975
Youngstown Y1		8.975

SHEETS, Culvert		
Cu Steel	Cu Fe	
Ashland, Ky. A10	6.95	7.20
Canton, O. R2	6.95	7.45
Fairfield T2	6.95	7.20
Gary, Ind. U5	6.95	7.20
Granite City, Ill. G4	7.15	
Ind. Harbor I-2	6.95	7.20
Irvin, Pa. U5	6.95	7.20
Kokomo, Ind. C16	7.05	
Martins Fry, W10	6.95	7.20
Pitts., Calif. C11	7.70	
Pittsburgh J5	6.95	
Sparrows Pt. B2	6.95	

SHEETS, Culvert—Pure Iron		
Ind. Harbor, Ind. I-2		7.20

SHEETS, Galvanized Steel Hot-Dipped		
Alabama City, Ala. R2		6.60†
Ashland, Ky. A10		6.60†
Canton, O. R2		6.60†
Dover, O. E6		6.60†
Fairfield, Ala. T2		6.60†
Gary, Ind. U5		6.60†
Granite City, Ill. G4		6.80†
Ind. Harbor, Ind. I-2		6.60†
Irvin, Pa. U5		6.60†
Kokomo, Ind. C16		6.70†
Martins Ferry, O. W10		6.60†
Middletown, O. A10		6.60†
Pittsburgh, Calif. C11		7.35†
Pittsburgh J5		6.60†
Sparrows Pt., Md. B2		6.60†
Warren, O. R2		6.60†
Weirton, W. Va. W6		6.60†

*Continuous and noncontinuous. †Continuous. ‡Noncontinuous.

SHEETS, Well Casing		
Fontana, Calif. K1		7.175

SHEETS, Galvanized High-Strength, Low-Alloy		
Irvin, Pa. U5		9.725
Sparrows Pt. (39) B2		9.725

SHEETS, Galvanized Ingot Iron (Hot-Dipped Continuous)		
Ashland, Ky. A10		6.85
Middletown, O. A10		6.85

SHEETS, Electrogalvanized		
Cleveland (28) R2		7.425
Niles, O. (28) R2		7.425
Youngstown J5		7.275
Weirton, W. Va. W6		7.275

SHEETS, Aluminum Coated		
Butler, Pa. A10 (type 1)		9.25
Butler, Pa. A10 (type 2)		9.35

SHEETS, Enameling Iron		
Ashland, Ky. A10		6.625
Cleveland R2		6.625
Fairfield, Ala. T2		6.625
Gary, Ind. U5		6.625
Granite City, Ill. G4		6.825
Ind. Harbor, Ind. I-2, Y1		6.625
Irvin, Pa. U5		6.625
Middletown, O. A10		6.625
Niles, O. M21, S3		6.625
Youngstown Y1		6.625

BLUED STOCK, 29 Gage		
Follansbee, W. Va. F4		8.65
Ind. Harbor, Ind. I-2		8.475
Yorkville, O. W10		8.475

SHEETS, Long Terme, Steel (Commercial Quality)		
Beech Bottom, W. Va. W10		7.00
Gary, Ind. U5		7.00
Mansfield, O. E6		7.00
Middletown, O. A10		7.00
Niles, O. M21, R2, S3		7.00
Weirton, W. Va. W6		7.00

SHEETS, Long Terme, Ingot Iron		
Middletown, O. A10		7.40

Key To Producers

A1 Acme Steel Co.	C20 Cuyahoga Steel & Wire	J1 Jackson Iron & Steel Co.	P1 Pacific States Steel Corp.	S25 Stainless Welded Prod.
A2 Acme-Newport Steel Co.	C22 Claymont Plant, Wick-	J3 Jessop Steel Co.	P2 Pacific Tube Co.	S26 Specialty Wire Co. Inc.
A3 Alan Wood Steel Co.	wire Spencer Steel Div.,	J4 Johnson Steel & Wire Co.	P4 Phoenix Iron & Steel Co.,	S30 Sierra Drawn Steel Corp.
A4 Allegheny Ludlum Steel	Colo. Fuel & Iron	J5 Jones & Laughlin Steel	Sub. of Barium Steel	S40 Seneca Steel Service
A5 Alloy Metal Wire Div.,	C23 Charter Wire Inc.	J6 Joslyn Mfg. & Supply	Corp.	S41 Stainless Steel Div.,
H. K. Porter Co. Inc.	C24 G. O. Carlson Inc.	J7 Judson Steel Corp.	P5 Pilgrim Drawn Steel	J&L Steel Corp.
A6 American Shm Steel Co.	C32 Carpenter Steel of N. Eng.	J8 Jersey Shore Steel Co.	P6 Pittsburgh Coke & Chem.	S42 Southern Elec. Steel Co.
A7 American Steel & Wire	D2 Detroit Steel Corp.	K1 Kaiser Steel Corp.	P7 Pittsburgh Steel Co.	T2 Tenn. Coal & Iron Div.,
Div., U. S. Steel Corp.	D3 Dearborn Div., Sharon	K2 Keokuk Electro-Metals	P11 Pollak Steel Co.	U. S. Steel Corp.
A8 Anchor Drawn Steel Co.	D4 Disston Div., H. K. Por-	K3 Keystone Drawn Steel	P12 Portsmouth Div.,	T3 Tenn. Products & Chem-
A9 Angell Nail & Chaplet	ter Co. Inc.	K4 Keystone Steel & Wire	Detroit Steel Corp.	ical Corp.
A10 Armco Steel Corp.	D6 Driver-Harris Co.	K7 Kenmore Metals Corp.	P13 Precision Drawn Steel	T4 Texas Steel Co.
A11 Atlantic Steel Co.	D7 Dickson Weatherproof	L1 Laclede Steel Co.	P14 Pitts. Screw & Bolt Co.	T5 Thomas Strip Div.,
	Nail Co.	L2 LaSalle Steel Co.	P15 Pittsburgh Metallurgical	Pittsburgh Steel Co.
	D8 Damascus Tube Co.	L3 Latrobe Steel Co.	P16 Page Steel & Wire Div.,	T6 Thompson Wire Co.
	D9 Wilbur B. Driver Co.	L6 Lone Star Steel Co.	American Chain & Cable	T7 Timken Roller Bearing
	E1 Eastern Gas & Fuel Assoc.	L7 Lukens Steel Co.	P17 Plymouth Steel Corp.	T8 Tonawanda Iron Div.,
	E2 Eastern Stainless Steel	M1 McLouth Steel Corp.	P19 Pitts. Rolling Mills	Am. Rad. & Stan. San.
	E4 Electro Metallurgical Co.	M4 Mahoning Valley Steel	P20 Prod. Steel Strip Corp.	T9 Tube Methods Inc.
	E5 Elliott Bros. Steel Co.	M6 Mercer Pipe Div., Saw-	P22 Phoenix Mfg. Co.	T19 Techalloy Co. Inc.
	E6 Empire-Reeves Steel	hill Tubular Products	P24 Phil. Steel & Wire Corp.	U4 Universal-Cyclops Steel
	Corp.	M8 Mid-States Steel & Wire	R2 Republic Steel Corp.	U5 United States Steel Corp.
	F2 Firth Sterling Inc.	M12 Moltrup Steel Products	R3 Rhode Island Steel Corp.	U6 U. S. Pipe & Foundry
	F3 Fitzsimmons Steel Co.	M14 McInnes Steel Co.	R5 Roebeling's Sons, John A.	U7 Ulbrich Stainless Steels
	F4 Follansbee Steel Corp.	M16 Md. Fine & Special Wire	R6 Rome Strip Steel Co.	U8 U. S. Steel Supply Div.,
	F5 Franklin Steel Div.,	M17 Metal Forming Corp.	R8 Reliance Div. Eaton Mfg.	U. S. Steel Corp.
	Borg-Warner Corp.	M18 Milton Steel Div.,	R9 Rome Mfg. Co.	V2 Vanadium-Alloys Steel
	F6 Fretz-Moon Tube Co.	Merritt-Chapman & Scott	R10 Rodney Metals Inc.	V3 Vulcan-Kidd Steel
	F7 Ft. Howard Steel & Wire	M21 Mallory-Sharon	S1 Seneca Wire & Mfg. Co.	Div., H. K. Porter Co.
	F8 Ft. Wayne Metals Inc.	Metals-Sharon	S3 Sharon Steel Corp.	W1 Wallace Barnes Co.
	G4 Granite City Steel Co.	M22 Mill Strip Products Co.	S4 Sharon Tube Co.	W2 Wallingford Steel Co.
	G5 Great Lakes Steel Corp.	N1 National-Standard Co.	S5 Sheffield Div.,	W3 Washburn Wire Co.
	G6 Greer Steel Co.	N2 National Supply Co.	Armco Steel Corp.	W4 Washington Steel Corp.
	G8 Green River Steel Corp.	N3 National Tube Div.,	S6 Shenango Furnace Co.	W6 Weirton Steel Co.
	H1 Hanna Furnace Corp.	U. S. Steel Corp.	S7 Simmons Co.	W8 Western Automatic
	H7 Helical Tube Co.	N5 Nelsen Steel & Wire Co.	S8 Simonds Saw & Steel Co.	Machine Screw Co.
	I-1 Igoo Bros. Inc.	N6 New England High	S12 Spencer Wire Corp.	W9 Wheeland Tube Co.
	I-2 Inland Steel Co.	Carbon Wire Co.	S13 Standard Forgings Corp.	W10 Wheeling Steel Corp.
	I-3 Interlake Iron Corp.	N8 Newman-Crosby Steel	S14 Standard Tube Co.	W12 Wickwire Spencer Steel
	I-4 Ingersoll Steel Div.,	N9 Newport Steel Corp.	S15 Stanley Works	Div., Colo. Fuel & Iron
	Borg-Warner Corp.	N14 Northwest Steel Rolling	S17 Superior Drawn Steel Co.	W13 Wilson Steel & Wire Co.
	I-6 Irvins Steel Tube Works	Mills Inc.	S18 Superior Steel Div.,	W14 Wisconsin Steel Div.,
	I-7 Indiana Steel & Wire Co.	N15 Northwestern S.&W. Co.	Copperweld Steel Co.	International Harvester
		N20 Neville Ferro Alloy Co.	S19 Sweet's Steel Co.	W15 Woodward Iron Co.
		O4 Oregon Steel Mills	S20 Southern States Steel	W18 Wyckoff Steel Co.
			S23 Superior Tube Co.	Y1 Youngstown Sheet & Tube

STRIP

STRIP, Hot-Rolled Carbon

Ala. City, Ala. (27) R2	4.925
Allenport, Pa. P7	4.925
Alton, Ill. L1	5.125
Ashland, Ky. (8) A10	4.925
Atlanta A11	4.925
Bessemer, Ala. T2	4.925
Birmingham C15	4.925
Buffalo (27) R2	4.925
Conshohocken, Pa. A3	4.975
Detroit M1	5.025
Ecorse, Mich. G5	5.025
Fairfield, Ala. T2	4.925
Fontana, Calif. K1	5.675
Gary, Ind. U5	4.925
Ind. Harbor, Ind. I-2, Y1	4.925
Johnstown, Pa. (25) B2	4.925
Lackawanna, N.Y. (25) B2	4.925
Los Angeles (25) B3	5.675
Minneapolis, Colo. C10	6.025
Riverdale, Ill. A1	4.925
San Francisco S7	6.35
Seattle (25) B3	5.925
Seattle N14	6.35
Sharon, Pa. S3	4.925
S. Chicago W14	4.925
S. San Francisco (25) B3	5.675
SparrowsPoint, Md. B2	4.925
Sterling, Ill. (1) N15	4.925
Sterling, Ill. N15	5.025
Torrance, Calif. C11	5.675
Warren, O. R2	4.925
Weirton, W. Va. W6	4.925
Youngstown U5	4.925

STRIP, Hot-Rolled Alloy

Carnegie, Pa. S18	8.10
Farrell, Pa. S3	8.10
Gary, Ind. U5	8.10
Houston S5	8.35
Ind. Harbor, Ind. Y1	8.10
Kansas City, Mo. S5	8.35
Los Angeles B3	9.30
Lowellville, O. S3	8.10
Newport, Ky. A2	8.10
Sharon, Pa. A2, S3	8.10
S. Chicago, Ill. W14	8.10
Youngstown U5, Y1	8.10

STRIP, Hot-Rolled High-Strength, Low-Alloy

Bessemer, Ala. T2	7.325
Conshohocken, Pa. A3	7.325
Ecorse, Mich. G5	7.425
Fairfield, Ala. T2	7.325
Farrell, Pa. S3	7.325
Gary, Ind. U5	7.325
Ind. Harbor, Ind. I-2, Y1	7.325
Lackawanna, N.Y. B2	7.325
Los Angeles (25) B3	8.075
Seattle (25) B3	8.325
Sharon, Pa. S3	7.325
S. Chicago, Ill. W14	7.325
S. San Francisco (25) B3	8.075
SparrowsPoint, Md. B2	7.325
Warren, O. R2	7.325
Weirton, W. Va. W6	7.325
Youngstown U5, Y1	7.325

STRIP, Hot-Rolled Ingot Iron

Ashland, Ky. (8) A10	5.175
Warren, O. R2	5.675

STRIP, Cold-Rolled Carbon

Anderson, Ind. G6	7.15
Baltimore T6	7.15
Boston T6	7.70
Buffalo S40	7.15
Cleveland A7, J5	7.15
Conshohocken, Pa. A3	7.20
Dearborn, Mich. D3	7.25
Detroit D2, M1, P20	7.25
Dover, O. G6	7.15
Ecorse, Mich. G5	7.25
Evanston, Ill. M22	7.25
Fontana, Calif. K1	9.00
Franklin Park, Ill. T6	7.25
Ind. Harbor, Ind. Y1	7.15
Indianapolis J5	7.30
Los Angeles C1	9.05
Los Angeles C1	9.20
New Bedford, Mass. R10	7.60
New Britain, Conn. S15	7.60
New Castle, Pa. B4, E5	7.15
New Haven, Conn. D2	7.60
New Kensington, Pa. A6	7.15
Pawtucket, R.I. R3	7.80
Pawtucket, R.I. N8	7.70
Philadelphia P24	7.70
Pittsburgh J5	7.15
Riverdale, Ill. A1	7.25
Rome, N.Y. (32) R6	7.15
Sharon, Pa. S3	7.15
Trenton, N.J. (31) R5	8.60
Wallingford, Conn. W2	7.60
Warren, O. R2, T5	7.15
Weirton, W. Va. W6	7.15
Worcester, Mass. A7	7.70
Youngstown J5, Y1	7.15

STRIP, Cold-Rolled Alloy

Boston T6	15.40
Carnegie, Pa. S18	15.05
Cleveland A7	15.05
Dover, O. G6	15.05
Farrell, Pa. S3	15.05
Franklin Park, Ill. T6	15.05
Harrison, N.J. C18	15.05
Indianapolis J5	15.20
Lowellville, O. S3	15.05
Pawtucket, R.I. N8	15.40
Riverdale, Ill. A1	15.05
Sharon, Pa. S3	15.05
Worcester, Mass. A7	15.35
Youngstown J5	15.05

STRIP, Cold-Rolled High-Strength, Low-Alloy

Cleveland A7	10.45
Dearborn, Mich. D3	10.60
Dover, O. G6	10.45
Ecorse, Mich. G5	10.60
Farrell, Pa. S3	10.50
Ind. Harbor, Ind. Y1	10.65
Sharon, Pa. S3	10.50
Warren, O. R2	10.45

STRIP, Cold-Finished Spring Steel (Annealed)

Baltimore T6	9.50	10.70	12.90	15.90	18.85
Boston T6	9.50	10.70	12.90	15.90	18.85
Bristol, Conn. W1	10.70	12.90	16.10	19.30	
Carnegie, Pa. S18	8.95	10.40	12.60	15.60	18.55
Cleveland A7	8.95	10.40	12.60	15.60	18.55
Dearborn, Mich. D3	9.05	10.50	12.70	15.70	
Detroit D2	9.05	10.50	12.70	15.70	18.55
Dover, O. G6	8.95	10.40	12.60	15.60	18.55
Evanston, Ill. M22	8.95	10.40	12.60	15.60	18.55
Fosteria, O. S1	10.05	10.40	12.60	15.60	18.55
Franklin Park, Ill. T6	9.05	10.40	12.60	15.60	18.55
Harrison, N.J. C18	9.10	10.55	12.60	15.60	18.55
Indianapolis J5	9.10	10.55	12.60	15.60	18.55
Los Angeles C1	11.15	12.60	14.80	17.80	
Los Angeles J5	11.15	12.60	14.80		
New Britain, Conn. (10) S15	8.95	10.40	12.60	15.60	18.55
New Castle, Pa. B4, E5	8.95	10.40	12.60	15.60	
New Haven, Conn. D2	9.40	10.70	12.90	15.90	
New Kensington, Pa. A6	8.95	10.40	12.60	15.60	
New York W3	10.70	12.90	16.10	19.30	
Pawtucket, R.I. N8	9.50	10.70	12.90	15.90	18.85
Riverdale, Ill. A1	9.05	10.40	12.60	15.60	18.55
Rome, N.Y. (32) R6	8.95	10.40	12.60	15.60	18.55
Sharon, Pa. S3	8.95	10.40	12.60	15.60	18.55
Trenton, N.J. R5	10.70	12.90	16.10	19.30	
Wallingford, Conn. W2	9.40	10.70	12.90	15.90	18.75
Warren, O. T5	8.95	10.40	12.60	15.60	18.55
Worcester, Mass. A7, T6	9.50	10.70	12.90	15.90	18.85
Youngstown J5	8.95	10.40	12.60	15.60	18.55

Spring Steel (Tempered)

Bristol, Conn. W1	18.10	21.95	26.30		
Buffalo W12	18.10				
Fosteria, O. S1	18.30	22.15			
Franklin Park, Ill. T6	18.45	22.30	26.65		
Harrison, N.J. C18	18.10	21.95	26.30		
New York W3	18.10	21.95	26.30		
Palmer, Mass. W12	18.10				
Trenton, N.J. R5	18.10	21.95	26.30		
Worcester, Mass. A7, T6	18.10	21.95	26.30		
Youngstown J5	18.45	22.30	26.65		

SILICON STEEL

H.R. SHEETS (22 Ga., cut lengths) Field

Beech Bottom, W. Va. W10	11.80	12.90	13.95
Mansfield, O. E6	9.625	11.10	12.90
Newport, Ky. A2	9.625	11.10	12.90
Niles, O. M21, S3	9.625	11.10	12.90
Vandergrift, Pa. U5	11.10	12.90	13.95
Warren, O. R2	9.625	11.10	12.90
Zanesville, O. A10	11.10	12.90	13.95

C.R. COILS & CUT LENGTHS (22 Ga.)

Field

Beech Bottom, W. Va. W10	11.35	12.05	13.15	14.20
Brackenridge, Pa. A4	11.35	12.05	13.15	14.20
Granite City, Ill. G4	9.825*11.05*	11.75*	12.85*	
Indiana Harbor, Ind. I-2	9.625*11.05*	11.55*	12.65*	
Mansfield, O. E6	9.625*11.35	12.05	13.15	14.20
Vandergrift, Pa. U5	9.625*11.35	12.05	13.15	14.20
Warren, O. R2	9.625*11.35	12.05	13.15	14.20
Zanesville, O. A10	11.35†	12.05	13.15	14.20

H.R. SHEETS (22 Ga., cut lengths) T-72 T-65 T-58 T-52

Beech Bottom, W. Va. W10	15.00	15.55	16.05	17.10
Vandergrift, Pa. U5	15.00	15.55	16.05	17.10
Zanesville, O. A10	15.00	15.55	16.05	17.10

C.R. COILS & CUT LENGTHS (22 Ga.)

Grain Oriented

Brackenridge, Pa. A4	17.60	19.20	19.70	20.20	15.25†
Butler, Pa. A10	19.20	19.70	20.20		
Vandergrift, Pa. U5	16.60	17.60	19.20	19.70	20.20
Warren, O. R2					15.25†

*Semi-processed. †Fully processed only. ‡Coils, annealed, semi-processed 1/2 cent lower. **Cut lengths, 1/4-cent lower. ††Coils only.

Weirton, W. Va. W6

Youngstown Y1	10.65
---------------	-------

STRIP, Cold-Rolled Ingot Iron

Warren, O. R2	7.90
---------------	------

STRIP, C.R. Electroalvanized

Cleveland A7	7.15*
Dover, O. G6	7.15*
Evanston, Ill. M22	7.25*
Riverdale, Ill. A1	7.25*
Warren, O. B9, T5	7.15*
Worcester, Mass. A7	7.70*
Youngstown J5	7.15*

*Plus galvanizing extras.

STRIP, Galvanized (Continuous)

Sharon, Pa. S3	7.275
----------------	-------

TIGHT COOPERAGE HOOP

Atlanta A11	5.65
Riverdale, Ill. A1	5.50
Sharon, Pa. S3	5.35
Youngstown U5	5.35

TIN MILL PRODUCTS

TIN PLATE, Electrolytic (Base Box)

Alquippa, Pa. J5	0.25 lb \$8.75	0.50 lb \$9.00	0.75 lb \$9.40
Fairfield, Ala. T2	8.85	9.10	9.50
Fairless, Pa. U5	8.85	9.10	9.50
Fontana, Calif. K1	9.50	9.75	10.15
Gary, Ind. U5	8.75	9.00	9.40
Granite City, Ill. G4	8.85	9.10	9.50
Indiana Harbor, Ind. I-2, Y1	8.75	9.00	9.40
Irvin, Pa. U5	8.75	9.00	9.40
Niles, O. R2	8.75	9.00	9.40
Pittsburg, Calif. C11	9.50	9.75	10.15
SparrowsPoint, Md. B2	8.85	9.10	9.50
Weirton, W. Va. W6	8.75	9.00	9.40
Yorkville, O. W10	8.75	9.00	9.40

ELECTROTIN (22-27 Gage; Dollars per 100 lb)

Alquippa, Pa. J5	7.725	7.925	
Niles, O. R2	7.725	7.925	8.125

TIN PLATE, American 1.25 lb 1.50 lb

Alquippa, Pa. J5	\$10.05	\$10.30
Fairfield, Ala. T2	10.15	10.40
Fairless, Pa. U5	10.15	10.40
Fontana, Calif. K1	10.80	11.05
Gary, Ind. U5	10.05	10.30
Ind. Harb. Y1	10.05	10.30
Pitts., Calif. C11	10.80	11.05
Sp. Pt., Md. B2	10.15	10.40
Weirton, W. Va. W6	10.05	10.30
Yorkville, O. W10	10.05	10.30

BLACK PLATE (Base Box)

Alquippa, Pa. J5	\$7.85
Fairfield, Ala. T2	7.95
Fairless, Pa. U5	7.95
Fontana, Calif. K1	8.60
Gary, Ind. U5	7.85
Granite City, Ill. G4	7.95
Ind. Harbor, Ind. I-2, Y1	7.85
Irvin, Pa. U5	7.85

WIRE

WIRE, Manufacturers Bright, Low Carbon

Alabama City, Ala. R2	7.65
Alquippa, Pa. J5	7.65
Alton, Ill. L1	7.85
Atlanta A11	7.65
Bartonsville, Ill. K4	7.75
Buffalo W12	7.65
Chicago W13	7.65
Cleveland A7, C20	7.65
Crawfordsville, Ind. M8	7.75
Donora, Pa. A7	7.65
Duluth A7	7.65
Fairfield, Ala. T2	7.65
Fosteria, O. (24) S1	7.75
Houston S5	7.90
Jacksonville, Fla. M8	8.00
Johnstown, Pa. B2	7.65
Joliet, Ill. A7	7.65
Kansas City, Mo. S5	7.90
Kokomo, Ind. C16	7.75
Los Angeles B3	8.60
Minneapolis, Colo. C10	7.90
Minnequa, Colo. C10	9.50
Monessen, Pa. P7, P16	7.65
N. Tonawanda, N.Y. B11	7.65
Palmer, Mass. W12	7.95
Pittsburg, Calif. C11	8.60
Portsmouth, O. P12	7.65
Rankin, Pa. A7	7.65
S. Chicago, Ill. R2	7.65
S. San Francisco C10	8.60
SparrowsPoint, Md. B2	7.75
Sterling, Ill. (1) N15	7.65
Sterling, Ill. N15	7.75
Struthers, O. Y1	7.65
Waukegan, Ill. A7	7.65
Worcester, Mass. A7	7.95

WIRE, Gal'd ACSF for Cores

Bartonsville, Ill. K4	12.65	Bartonsville, Ill. K4	15.70
Buffalo W12	12.65	Buffalo W12	15.60
Cleveland A7	12.65	Chicago W13	15.60
Donora, Pa. A7	12.65	Cleveland A7	15.60
Duluth A7	12.65	Frankfortsville, Ind. M8	15.70
Johnstown, Pa. B2	12.65	Castoria, O. S1	15.60
Minnequa, Colo. C10	12.775	Houston S5	15.85
Monessen, Pa. P7, P16	12.65	Jacksonville, Fla. M8	15.95
Muncie, Ind. I-7	12.85	Johnstown, Pa. B2	15.60
New Haven, Conn. A7	12.95	Kansas City, Mo. S5	15.85
Palmer, Mass. W12	12.95	Kokomo, Ind. C16	15.60
Pittsburg, Calif. C11	13.45	Minnequa, Colo. C10	15.85
Portsmouth, O. P12	12.65	Monessen, Pa. P16	15.60
Roebing, N.J. R5	12.95	Muncie, Ind. I-7	15.80
Sparrows Pt., Md. B2	12.75	Palmer, Mass. W12	15.90
Struthers, O. Y1	12.65	S. San Francisco C10	16.45
Trenton, N.J. A7	12.95	Waukegan, Ill. A7	15.60
Waukegan, Ill. A7	12.65	Worcester, Mass. A7, T6	15.90
Worcester, Mass. A7	12.95		

WIRE, Tire Bead	
Bartonville, Ill. K4	16.55
Monessen, Pa. P16	16.55
Toebing, N.J. R5	17.05

WIRE, Cold-Rolled Flat	
Anderson, Ind. G6	11.65
Baltimore T6	11.95
Boston T6	11.95
Buffalo W12	11.65
Chicago W13	11.75
Cleveland A7	11.65
Crawfordsville, Ind. M8	11.65
Dover, O. G6	11.65
Postoria, O. S1	11.65
Franklin Park, Ill. T6	11.75
Kokomo, Ind. C16	11.65
Massillon, O. R3	11.65
Milwaukee C23	11.85
Monessen, Pa. P7, P16	11.65
Palmer, Mass. W12	11.95
Pawtucket, R.I. N8	11.95
Philadelphia P24	11.95
Riverdale, Ill. A1	11.75
Rome, N.Y. R6	11.65
Sharon, Pa. S3	11.65
Trenton, N.J. R5	11.95
Warren, O. B9	11.65
Worcester, Mass. A7, T6	11.95

NAILS, Stock	Col.
Alabama City, Ala. R2	173
Alliquippa, Pa. J5	173
Atlanta A11	175
Bartonville, Ill. K4	175
Chicago W13	173
Cleveland A9	173
Crawfordsville, Ind. M8	175
Donora, Pa. A7	173
Duluth A7	173
Fairfield, Ala. T2	173
Houston S5	173
Jacksonville, Fla. (20) M8	184
Johnstown, Pa. B2	173
Joliet, Ill. A7	173
Kansas City, Mo. S5	178
Kokomo, Ind. C16	175
Minnequa, Colo. C10	178
Monessen, Pa. P7	173
Pittsburg, Calif. C11	192
Rankin, Pa. A7	173
S. Chicago, Ill. R2	173
Sparrows Pt., Md. B2	175
Sterling, Ill. (7) N15	175
Worcester, Mass. A7	179

(To Wholesalers; per cwt)
Galveston, Tex. D7 \$9.10

NAILS, Cut (100 lb keg)	
To Dealers (33)	
Conshohocken, Pa. A3	\$9.80
Wheeling, W. Va. W10	9.80

POLISHED STAPLES	Col.
Alabama City, Ala. R2	175
Alliquippa, Pa. J5	175
Atlanta A11	177
Bartonville, Ill. K4	177
Crawfordsville, Ind. M8	177
Donora, Pa. A7	175
Duluth A7	175
Fairfield, Ala. T2	175
Houston S5	180
Jacksonville, Fla. (20) M8	186
Johnstown, Pa. B2	175
Joliet, Ill. A7	175
Kansas City, Mo. S5	180
Kokomo, Ind. C16	177
Minnequa, Colo. C10	180
Pittsburgh, Calif. C11	194
Rankin, Pa. A7	175
S. Chicago, Ill. R2	175
Sparrows Pt., Md. B2	177
Sterling, Ill. (7) N15	175
Worcester, Mass. A7	181

TIE WIRE, Automatic Baler	
(1 1/2 Ga.) (Per 97 lb Net Box)	
Coil No. 3150	
Alabama City, Ala. R2	\$10.26
Atlanta A11	10.36
Bartonville, Ill. K4	10.36
Buffalo W12	10.26
Chicago W13	10.26
Crawfordsville, Ind. M8	10.36
Donora, Pa. A7	10.26
Duluth A7	10.26
Fairfield, Ala. T2	10.26
Houston S5	10.51
Jacksonville, Fla. M8	10.82
Johnstown, Pa. B2	10.26
Joliet, Ill. A7	10.26
Kansas City, Mo. S5	10.51
Kokomo, Ind. C16	10.36
Los Angeles B3	11.05
Minnequa, Colo. C10	10.51
Pittsburg, Calif. C11	11.04
S. Chicago, Ill. R2	10.26
S. San Francisco C10	11.04
Sparrows Pt., Md. B2	10.36
Sterling, Ill. (37) N15	10.36

Coil No. 6500 Stand.	
Alabama City, Ala. R2	\$10.60
Atlanta A11	10.70
Bartonville, Ill. K4	10.70
Buffalo W12	10.60
Chicago W13	10.60
Crawfordsville, Ind. M8	10.70
Donora, Pa. A7	10.60
Duluth A7	10.60

Fairfield, Ala. T2	10.60
Houston S5	10.85
Jacksonville, Fla. M8	11.16
Johnstown, Pa. B2	10.60
Joliet, Ill. A7	10.60
Kansas City, Mo. S5	10.85
Kokomo, Ind. C16	10.70
Los Angeles B3	11.40
Minnequa, Colo. C10	10.85
Pittsburg, Calif. C11	11.40
S. Chicago, Ill. R2	10.60
S. San Francisco C10	11.40
Sparrows Pt., Md. B2	10.70
Sterling, Ill. (37) N15	10.70

Coil No. 6500 Interim	
Alabama City, Ala. R2	\$10.65
Atlanta A11	10.75
Bartonville, Ill. K4	10.75
Buffalo W12	10.65
Chicago W13	10.65
Crawfordsville, Ind. M8	10.75
Donora, Pa. A7	10.65
Duluth A7	10.65
Fairfield, Ala. T2	10.65
Houston S5	10.90
Jacksonville, Fla. M8	11.21
Johnstown, Pa. B2	10.65
Joliet, Ill. A7	10.65
Kansas City, Mo. S5	10.90
Kokomo, Ind. C16	10.75
Los Angeles B3	11.45
Minnequa, Colo. C10	10.90
Pittsburg, Calif. C11	11.45
S. Chicago, Ill. R2	10.65
S. San Francisco C10	11.45
Sparrows Pt., Md. B2	10.75
Sterling, Ill. (37) N15	10.75

BALE TIES, Single Loop	Col.
Alabama City, Ala. R2	212
Atlanta A11	214
Bartonville, Ill. K4	214
Crawfordsville, Ind. M8	214
Donora, Pa. A7	212
Duluth A7	212
Fairfield, Ala. T2	212
Houston S5	217
Jacksonville, Fla. M8	219
Joliet, Ill. A7	212
Kansas City, Mo. S5	217
Kokomo, Ind. C16	214
Minnequa, Colo. C10	217
Pittsburg, Calif. C11	236
S. San Francisco C10	236
Sparrows Pt., Md. B2	214
Sterling, Ill. (7) N15	214

FENCE POSTS	
Birmingham C15	172
Chicago A7s, Ill. C2, 1-2	172
Duluth A7	172
Franklin, Pa. F5	172
Huntington, W. Va. C15	172
Johnstown, Pa. B2	172
Marion, O. P11	192*
Minnequa, Colo. C10	177
Sterling, Ill. (1) N15	172
Tonawanda, N.Y. B12	174

WIRE, Barbed	Col.
Alabama City, Ala. R2	193**
Alliquippa, Pa. J5	190*
Atlanta A11	198*
Bartonville, Ill. K4	198
Crawfordsville, Ind. M8	198
Donora, Pa. A7	193*
Duluth A7	193*
Fairfield, Ala. T2	193*
Houston S5	198**
Jacksonville, Fla. M8	203
Johnstown, Pa. B2	196*
Joliet, Ill. A7	193*
Kansas City, Mo. S5	198**
Kokomo, Ind. C16	195*
Minnequa, Colo. C10	198**
Monessen, Pa. P7	196*
Pittsburg, Calif. C11	213*
Rankin, Pa. A7	193*
S. Chicago, Ill. R2	193**
S. San Francisco C10	213**
Sparrows Point, Md. B2	198*
Sterling, Ill. (7) N15	198**

WOVEN FENCE, 9-15 Ga.	Col.
Ala. City, Ala. R2	187**
Aliq'ppa, Pa. 9-14 1/2 ga. J5	190*
Atlanta A11	192*
Bartonville, Ill. K4	192
Crawfordsville, Ind. M8	192
Donora, Pa. A7	187*
Duluth A7	187*
Fairfield, Ala. T2	187*
Houston S5	192**
Jacksonville, Fla. M8	197
Johnstown, Pa. (43) B2	190*
Joliet, Ill. A7	187*
Kansas City, Mo. S5	192**
Kokomo, Ind. C16	189*
Minnequa, Colo. C10	192**
Pittsburg, Calif. C11	210*
Rankin, Pa. A7	187*
S. Chicago, Ill. R2	187**
Sterling, Ill. (7) N15	192**

An'd Galv.	
WIRE (16 gage) Stone	
Ala. City, Ala. R2	17.15 18.70**
Aliq'ppa, Pa. J5	17.15 18.95
Bartonville K4	17.25 19.05
Cleveland A7	17.15

Crawfordsville M8	17.25 19.05
Postoria, O. S1	17.65 19.20*
Houston S5	17.40 18.95*
Jacksonville M8	17.50 19.30
Johnstown B2	17.15 18.95*
Kan. City, Mo. S5	17.40
Kokomo C16	17.25 18.80*
Minnequa C10	17.40 18.95*
P'l'm'r, Mass. W12	17.45 19.00*
Pitts., Calif. C11	17.50 19.05*
Sparrows Pt. B2	17.25 19.05*
Sterling (37) N15	17.25 19.05**
Waukegan A7	17.15 18.70*
Worcester A7	17.45

WIRE, Merchant Quality	
(6 to 8 gage) An'd Galv.	
Ala. City, Ala. R2	8.65 9.20**
Alliquippa J5	8.65 9.325*
Atlanta (48) A11	8.75 9.425*
Bartonville (48) K4	8.75 9.425
Buffalo W12	8.65 9.20*
Cleveland A7	8.65
Crawfordsville M8	8.75 9.425
Donora, Pa. A7	8.65 9.20*
Duluth A7	8.65 9.20*
Fairfield T2	8.65 9.20*
Houston (48) S5	8.90 9.45**
Jacks'ville, Fla. M8	9.00 9.675
Johnstown B2 (48)	8.65 9.325*
Joliet, Ill. A7	8.65 9.20*
Kans. City (48) S5	8.90 9.45**
Kokomo C16	8.75 9.30*
Los Angeles B3	9.60 10.275*
Minnequa C10	8.90 9.45**
Monessen P7 (48)	8.65 9.325*
Palmer, Mass. W12	8.95 9.50*
Pitts. Calif. C11	9.60 10.15*
Rankin, Pa. A7	8.65 9.20*
S. Chicago R2	8.65 9.20**
S. San Fran. C10	9.60 10.15**
Spar'ws Pt. B2 (48)	8.75 9.425*
Sterling (48) N15	8.90 9.575**
Sterling (1) (48)	8.80 9.475**
Struthers, O. Y1	8.65 9.30*
Worcester, Mass. A7	8.95 9.50*

Based on zinc price of:
*13.50. †5c. ‡10c. †Less than 10c. ††10.50c. **Subject to zinc equalization extras.

FASTENERS	
(Base discounts, full container quantity, per cent off list, f.o.b. mill)	

BOLTS	
Carriage, Machine Bolts	
Full Size Body (cut thread)	
1/2 in. and smaller:	
6 in. and shorter	49.0
Longer than 6 in.	39.0
1/2 in. thru 1 in.:	
6 in. and shorter	39.0
Longer than 6 in.	35.0
1 1/2 in. and larger:	
All lengths	35.0
Undersized Body (rolled thread)	
1/2 in. and smaller:	
6 in. and shorter	49.0

Carriage, Machine, Lag Bolts	
Hot Galvanized:	
1/2 in. and smaller:	
6 in. and shorter	29.0
Longer than 6 in.	15.0
1/2 in. and larger:	
All lengths	12.0

Lag Bolts (all diam.)	
6 in. and shorter	49.0
Longer than 6 in.	39.0

Plow and Tap Bolts	
1/2 in. and smaller by	
6 in. and shorter	49.0
Larger than 1/2 in. or longer than 6 in.	39.0
Blank Bolts	39.0
Step, Elevator, Tire Bolts	49.0

Stove Bolts, Slotted:	
3/4 to 1 1/2 in. incl.,	
3 in. and shorter.	55.0
1 1/2 to 1 1/2 in., inclusive	55.0

NUTS	
Reg. & Heavy Square Nuts:	
All sizes	55.5
Square Nuts, Reg. & Heavy, Hot Galvanized:	
All sizes	41.0

Hex Nuts, Reg. & Heavy, Hot Pressed:	
3/4 in. and smaller	60.5
3/4 in. to 1 in., incl.	55.5
1 1/2 in. to 1 1/2 in., incl.	58.5
1 1/2 in. and larger	53.5

Hex Nuts, Reg. & Heavy, Cold Punched:	
3/4 in. and smaller	60.5
3/4 in. to 1 1/2 in., incl.	55.5
1 1/2 in. and larger	53.5

Hex Nuts, All Types, Hot Galvanized:	
3/4 in. and smaller	46.5
3/4 in. to 1 in., incl.	41.5
1 1/2 in. to 1 1/2 in., incl.	46.5

Hex Nuts, Semifinished, Heavy (Incl. Slotted):	
3/4 in. and smaller	60.5
3/4 in. to 1 1/2 in., incl.	55.5
1 1/2 in. and larger	53.5
Hex Nuts, Finished (Incl. Slotted and Castellated):	
1 in. and smaller	63.0
1 1/2 in. to 1 1/2 in., incl.	59.0
1 1/2 in. and larger	53.5

Semifinished Hex Nuts, Reg. (Incl. Slotted):	
3/4 in. and smaller	60.5
3/4 in. to 1 in., incl.	63.0
1 1/2 to 1 1/2 in., incl.	59.0
1 1/2 in. and larger	53.5

CAP AND SETSCREWS
(Base discounts, packages, per cent off list, f.o.b. mill)

Hex Head Capscrews, Coarse or Fine Thread, Bright:	
6 in. and shorter:	
3/4 in. and smaller	40.0
3/4, 7/8, and 1 in.	22.0

BOILER TUBES

Net base c.l. prices, dollars per 100 ft. mill; minimum wall thickness, cut lengths 10 to 24 ft. inclusive.

O.D.	B.W. Gage	Seamless	Elec. Weld
In.		H.R.	C.D.
1	13	25.98	23.54
1 1/4	13	30.78	23.36
1 1/2	13	29.03	34.01
1 3/4	13	34.29	40.18
2	13	38.44	45.05
2 1/4	13	43.29	50.75
2 1/2	12	46.99	55.06
2 3/4	12	51.76	60.65
3	12	56.04	65.67
3 1/2	12	59.76	70.03

RAILWAY MATERIALS

Rails	Standard	Tee Rails
	No. 1	No. 2
Bessemer, Pa. U5	5.525	5.425
Ensley, Ala. T2	5.525	5.425
Fairfield, Ala. T2	5.525	5.425
Gary, Ind. U5	5.525	5.425
Huntington, W. Va. C15	5.525	5.425
Indiana Harbor, Ind. I-2	5.525	5.425
Johnstown, Pa. B2	5.525	5.425
Lackawanna, N.Y. B2	5.525	5.425
Minnequa, Colo. C10	5.525	5.425
Steelton, Pa. B2	5.525	5.425
Williamsport, Pa. S19	5.525	5.425

TIE PLATES	
Fairfield, Ala. T2	6.60
Gary, Ind. U5	6.60
Ind. Harbor, Ind. I-2	6.60
Lackawanna, N.Y. B2	6.60
Minnequa, Colo. C10	6.60
Seattle B3	6.75
Steelton, Pa. B2	6.60
Torrance, Calif. C11	6.75

JOINT BARS	
Bessemer, Pa. U5	6.975
Fairfield, Ala. T2	6.975
Ind. Harbor, Ind. I-2	6.975
Joliet, Ill. U5	6.975
Lackawanna, N.Y. B2	6.975
Minnequa, Colo. C10	6.975
Steelton, Pa. B2	6.975

AXLES	
Ind. Harbor, Ind. S13	8.775
Johnstown, Pa. B2	8.775

Footnotes	
(1	

SEAMLESS STANDARD PIPE, Threaded and Coupled

Size—Inches	2	2½	3	3½	4	5	6	
List Per Ft	37c	58.5c	76.5c	92c	\$1.09	\$1.48	\$1.92	
Pounds Per Ft	3.68	5.82	7.62	9.20	10.89	14.81	19.18	
	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*
Aliquippa, Pa. J5	+9.25	+24.25	+2.75	+19.5	+0.25	+17	1.25	+15.5
Ambridge, Pa. N2	+9.25	....	+2.75	....	+0.25	....	1.25	....
Lorain, O. N3	+9.25	+24.25	+2.75	+19.5	+0.25	+17	1.25	+15.5
Youngstown Y1	+9.25	+24.25	+2.75	+19.5	+0.25	+17	1.25	+15.5

ELECTRIC STANDARD PIPE, Threaded and Coupled

Youngstown R2	+9.25	+24.25	+2.75	+19.5	+0.25	+17	1.25	+15.5	1.25	+15.5	1	+15.75	3.9	+15.25
---------------	-------	-------	--------	-------	-------	-------	-----	------	-------	------	-------	---	--------	-----	--------

BUTTWELD STANDARD PIPE, Threaded and Coupled

Size—Inches	1½	2	2½	3	3½	4	5	6
List Per Ft	5.5c	6c	6.5c	7c	7.5c	8c	8.5c	9c
Pounds Per Ft	0.24	0.42	0.57	0.85	1.13	1.68	2.23	2.28
	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*
Aliquippa, Pa. J5	5.25	+10	8.25	+6	11.75	+1.5	14.25	+0.75
Alton, Ill. L1	5.25	+10	8.25	+6	11.75	+1.5	14.25	+0.75
Benwood, W. Va. W10	4.5	+22	7.5	+31	18	+39.5	3.25	+12
Butler, Pa. F6	5.5	+21	6.5	+30	17	+38.5	5.25	+10
Etna, Pa. N2	5.25	+10	8.25	+6	11.75	+1.5	14.25	+0.75
Fairless, Pa. N3	5.25	+10	8.25	+6	11.75	+1.5	14.25	+0.75
Fontana, Calif. K1	5.25	+10	8.25	+6	11.75	+1.5	14.25	+0.75
Indiana Harbor, Ind. Y1	4.25	+11	7.25	+7	10.75	+2.5	13.25	+3.25
Lorain, O. N3	5.25	+10	8.25	+6	11.75	+1.5	14.25	+0.75
Sharon, Pa. S4	5.5	+21	6.5	+30	17	+38.5	5.25	+10
Sharon, Pa. M6	5.25	+10	8.25	+6	11.75	+1.5	14.25	+0.75
Sparrows Pt., Md. B2	3.5	+23	8.5	+32	19	+40.5	3.25	+12
Wheatland, Pa. W9	5.5	+21	6	+30	17	+38.5	5.25	+10
Youngstown R2, Y1	5.25	+10	8.25	+6	11.75	+1.5	14.25	+0.75

Size—Inches	1½	2	2½	3	3½	4	5	6
List Per Ft	27.5c	37c	58.5c	76.5c	92c	\$1.09	\$1.48	\$1.92
Pounds Per Ft	2.73	3.68	5.82	7.62	9.20	10.89	14.81	19.18
	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*
Aliquippa, Pa. J5	14.75	0.25	15.25	0.75	16.75	0.5	16.75	0.5
Alton, Ill. L1	12.75	+1.75	13.25	+1.25	14.75	+1.5	14.75	+1.5
Benwood, W. Va. W10	14.75	0.25	15.25	0.75	16.75	0.5	16.75	0.5
Etna, Pa. N2	14.75	0.25	15.25	0.75	16.75	0.5	16.75	0.5
Fairless, Pa. N3	12.75	+1.75	13.25	+1.25	14.75	+1.5	14.75	+1.5
Fontana, Calif. K1	1.25	+13.25	1.75	+12.75	3.25	+13	3.25	+13
Indiana Harbor, Ind. Y1	13.75	+0.75	14.25	+0.25	15.75	+0.5	15.25	+0.5
Lorain, O. N3	14.75	0.25	15.25	0.75	16.75	0.5	16.75	0.5
Sharon, Pa. M6	14.75	0.25	15.25	0.75	16.75	0.5	16.75	0.5
Sparrows Pt., Md. B2	12.75	+1.75	13.25	+1.25	14.75	+1.5	14.75	+1.5
Wheatland, Pa. W9	14.75	0.25	15.25	0.75	16.75	0.5	16.75	0.5
Youngstown R2, Y1	14.75	0.25	15.25	0.75	16.75	0.5	16.75	0.5

*Galvanized pipe discounts based on current price of zinc (10.00c, East St. Louis).

Stainless Steel

Representative prices, cents per pound; subject to current lists of extras

AISI Type	—Re-rolling—	Forging Billets	H.R. Rods	Bars; Structural	C.R. Strip; Flat	Wire	Plates	Sheets
201	22.00	27.00	36.00	40.00	42.00	44.25	48.50	45.00
202	23.75	30.25	36.50	39.00	40.75	43.00	45.00	49.25
301	23.25	28.00	37.25	37.25	42.00	44.25	46.25	47.50
302	25.25	31.50	38.00	40.50	42.75	45.00	47.25	52.00
302B	25.50	32.75	40.75	45.75	45.00	47.25	49.50	57.00
303	32.00	41.00	46.00	45.50	48.00	50.00	56.75	56.75
304	27.00	33.25	40.50	44.25	45.25	47.75	50.75	55.00
304L	27.00	33.25	40.50	44.25	45.25	47.75	50.75	55.00
305	28.50	36.75	42.50	47.50	45.25	47.75	51.25	58.75
308	30.75	38.25	47.25	50.25	52.75	55.75	60.25	63.00
309	39.75	49.50	57.75	64.50	63.75	67.00	71.00	80.50
310	49.75	61.50	78.00	84.25	86.50	91.00	92.75	96.75
314	39.75	49.50	62.25	69.25	69.25	73.00	76.75	80.75
316	39.75	49.50	62.25	69.25	69.25	73.00	76.75	80.75
316L	39.75	49.50	62.25	69.25	69.25	73.00	76.75	80.75
317	48.00	60.00	76.75	88.25	86.25	90.75	93.50	101.00
321	32.25	40.00	47.00	53.50	52.50	55.50	59.75	65.50
330	37.00	46.50	55.75	63.50	61.50	64.75	69.75	79.25
18-8 CbTa	37.00	46.50	55.75	63.50	61.50	64.75	69.75	79.25
403	19.50	25.50	29.75	36.00	33.50	35.25	37.50	46.75
410	16.75	21.50	28.25	31.00	32.00	33.75	35.00	40.25
416	16.75	21.50	28.25	31.00	32.00	33.75	35.00	40.25
420	26.00	33.50	34.25	41.75	39.25	41.25	45.25	52.00
430	17.00	21.75	28.75	32.00	32.50	34.25	36.00	40.75
430F	17.00	21.75	28.75	32.00	32.50	34.25	36.00	40.75
431	28.75	37.75	42.00	44.25	44.25	46.00	56.00	56.00
446	39.25	59.00	44.25	46.50	47.75	70.00	70.00	70.00

Stainless Steel Producers Are: Allegheny Ludlum Steel Corp.; American Steel & Wire Div., U. S. Steel Corp.; Anchor Drawn Steel Co., division of Vanadium-Alloys Steel Co.; Armco Steel Corp.; Babcock & Wilcox Co.; Bethlehem Steel Co.; J. Bishop & Co.; A. M. Byers Co.; G. O. Carlson Inc.; Carpenter Steel Co.; Carpenter Steel Co. of New England; Charter Wire Products; Crucible Steel Co. of America; Damascus Tube Co.; Dearborn Div., Sharon Steel Corp.; Wilbur B. Driver Co.; Driver-Harris Co.; Eastern Stainless Steel Corp.; Firth Sterling Inc.; Fort Wayne Metals Inc.; Green River Steel Corp., subsidiary of Jessop Steel Co.; Indiana Steel & Wire Co.; Ingersoll Steel Div., Bcrgr-Warner Corp.; Ellwood Ivins Steel Tube Works Inc.; Jessop Steel Co.; Johnson Steel & Wire Co. Inc.; Stainless Steel Div., Jones & Laughlin Steel Corp.; Joslyn Stainless Steels, division of Joslyn Mfg. & Supply Co.; Latrobe Steel Co.; Lukens Steel Co.; Maryland Fine & Specialty Wire Co. Inc.; McLouth Steel Corp.; Metal Forming Corp.; Midvale-Heppenstall Co.; National Standard Co.; National Tube Div., U. S. Steel Corp.; Pacific Tube Co.; Page Steel & Wire Div., American Chain & Cable Co. Inc.; Pittsburgh Rolling Mills Inc.; Republic Steel Corp.; Riverside-Alloy Metal Div., H. K. Porter Company Inc.; Rodney Metals Inc.; Sawhill Tubular Products Inc.; Sharon Steel Corp.; Simonds Saw & Steel Co.; Specialty Wire Co. Inc.; Standard Tube Co.; Superior Steel Div., Copperweld Steel Co.; Superior Tube Co.; Swepco Tube Corp.; Techalloy Co. Inc.; Timken Roller Bearing Co.; Trent Tube Co., subsidiary of Crucible Steel Co. of America; Tube Methods Inc.; Ulbrich Stainless Steels Inc.; U. S. Steel Corp.; Universal-Cyclops Steel Corp.; Vanadium-Alloys Steel Co.; Wall Tube & Metal Products Co.; Wallingford Steel Co., subsidiary of Allegheny Ludlum Steel Corp.; Washington Steel Corp.

Clad Steel

	Plates Carbon Base	Sheets Carbon Base
	5% 10% 15% 20%	20%
Stainless		
302	34.70	37.50
304	34.70	37.50
304L	36.90	40.55
316	40.35	44.50
316L	45.05	49.35
316 Cb	47.30	53.80
321	36.60	40.05
347	38.25	42.40
405	28.60	29.85
410	28.15	29.55
430	28.30	29.80
Inconel	48.00	59.55
Nickel	41.65	51.95
Nickel, Low Carbon	41.95	52.60
Monel	43.35	53.55
Copper*	33.10	38.75

Strip, Carbon Base—Cold Rolled—10% Both Sides

*Deoxidized. Production points: Stainless-clad sheets, New Castle, Ind. I-4; stainless-clad plates, Claymont, Del. C22, Coatesville, Pa. L7, New Castle, Ind. I-4, and Washington, Pa. J3; nickel, inconel, monel-clad plates, Coatesville L7; copper-clad strip, Carnegie, Pa. S18.

Tool Steel

Grade	\$ per lb	Grade	\$ per lb
Regular Carbon	0.305	Cr-Hot Work	0.475
Extra Carbon	0.360	W-Cr Hot Work	0.500
Special Carbon	0.475	V-Cr Hot Work	0.520
Oil Hardening	0.475	Hi-Carbon-Cr	0.925

W	Cr	V	Co	Mo	\$ per lb
20.25	4.25	1.6	12.25	...	4.285
18.25	4.25	1	4.75	...	2.500
18	4	2	9	...	2.870
18	4	2	...	...	1.960
18	4	1	...	...	1.795
9	3.5	...	...	...	1.395
13.5	4	3	...	...	2.060
13.75	3.75	2	5	...	2.440
6.4	4.5	1.9	...	5	1.300
6	4	3	...	6	1.545
1.5	4	1	...	8.5	1.155

Tool steel producers include: A4, A8, B2, B8, C4, C9, C13, C18, F2, J3, L3, M14, S8, U4, V2, and V3.

Pig Iron

F.o.b. furnace prices in dollars per gross ton, as reported to STEEL. Minimum delivered prices are approximate and do not include 3% federal transportation tax.

	Basic	No. 2 Foundry	Malleable	Bessemer
Birmingham District				
Birmingham R2	62.00	62.50†	66.50	67.00
Birmingham U6	62.00**	62.50†	66.50	67.00
Woodward, Ala. W15	62.00**	62.50†	66.50	67.00
Cincinnati, deld.	70.20	70.20	71.12	71.12
Buffalo District				
Buffalo H1, R2	66.00	66.50	67.00	67.50
Tonawanda, N.Y. T9	66.00	66.50	67.00	67.50
Tonawanda, N.Y. W12	66.00	66.50	67.00	67.50
Boston, deld.	77.29	77.79	78.29	78.79
Rochester, N.Y., deld.	69.02	69.52	70.02	70.52
Syracuse, N.Y., deld.	70.12	70.62	71.12	71.62
Chicago District				
Chicago I-3	66.00	66.50	66.50	67.00
Chicago, Ill. R2	66.00	66.50	66.50	67.00
Chicago, Ill. W14	66.00	66.50	66.50	67.00
Milwaukee, deld.	69.02	69.52	69.52	70.02
Muskegon, Mich., deld.	74.52	74.52	74.52	74.52
Cleveland District				
Cleveland R2, A7	66.00	66.50	66.50	67.00
Akron, Ohio, deld.	69.12	69.62	69.62	70.12
Mid-Atlantic District				
Birdsboro, Pa. B10	68.00	68.50	69.00	69.50
Chester, Pa. P4	68.00	68.50	69.00	69.50
Swedeland, Pa. A3	68.00	68.50	69.00	69.50
New York, deld.	72.69	73.19	73.69	74.19
Newark, N.J., deld.	70.41	70.91	71.41	71.91
Philadelphia, deld.	68.00	68.50	69.00	69.50
Troy, N.Y. R2	68.00	68.50	69.00	69.50
Pittsburgh District				
Nevele Island, Pa. P6	66.00	66.50	66.50	67.00
Pittsburgh (N&S sides), Aliquippa, deld.	67.95	67.95	68.45	68.95
McKees Rocks, Pa., deld.	67.60	67.60	68.10	68.60
Lawrenceville, Homestead, Wilmerding, Monaca, Pa., deld.	68.26	68.26	68.79	69.29
Verona, Trafford, Pa., deld.	68.29	68.29	68.82	69.32
Brackenridge, Pa., deld.	68.60	69.10	69.10	69.63
Midland, Pa. C18	66.00	66.50	67.00	67.50
Youngstown District				
Hubbard, Ohio Y1	66.00	66.50	67.00	67.50
Sharpsville, Pa. S6	66.00	66.50	67.00	67.50
Youngstown Y1	66.00	66.50	67.00	67.50
Mansfield, Ohio, deld.	70.90	71.40	71.90	72.40

	Basic	No. 2 Foundry	Malleable	Bessemer
Duluth I-3	66.00	66.50	66.50	67.00
Erie, Pa. I-3	66.00	66.50	66.50	67.00
Everett, Mass. E1	67.50	68.00	68.50	69.00
Fontana, Calif. K1	75.00	75.50	76.00	76.50
Geneva, Utah C11	66.00	66.50	66.50	67.00
Granite City, Ill. G4	67.90	68.40	68.90	69.40
Ironton, Utah C11	66.00	66.50	66.50	67.00
Minnequa, Colo. C10	68.00	68.50	69.00	69.50
Rockwood, Tenn. T3	66.00	66.50	66.50	67.00
Toledo, Ohio I-3	66.00	66.50	66.50	67.00
Cincinnati, deld.	72.54	73.04	73.54	74.04

**Phos. 0.70-0.90%; Phos. 0.30-0.69%, \$63.
†Phos. 0.70-0.90%; Phos. 0.30-0.69%, \$63.50.

PIG IRON DIFFERENTIALS

Silicon: Add 75 cents per ton for each 0.25% Si or percentage thereof over base grade, 1.75-2.25%, except on low phos. iron on which base is 1.75-2.00%.

Manganese: Add 50 cents per ton for each 0.25% manganese over 1% or portion thereof.

Nickel: Under 0.50% no extra; 0.50-0.74%, inclusive, add \$2 per ton and each additional 0.25%, add \$1 per ton.

BLAST FURNACE SILVERY PIG IRON, Gross Ton

(Base 6.00-6.50% silicon; add \$1 for each 0.50% silicon or portion thereof over the base grade within a range of 6.50 to 11.60%; starting with silicon over 11.50% add \$1.50 per ton for each 0.50% silicon or portion thereof up to 14%; add \$1 for each 0.50% Mn over 1%)
Jackson, Ohio I-3, J1 \$78.00
Buffalo H1 79.25

ELECTRIC FURNACE SILVERY IRON, Gross Ton

(Base 14.01-14.50% silicon; add \$1 for each 0.5% Si to 18%; \$1.25 for each 0.50% Mn over 1%; \$2 per gross ton premium for 0.045% max P)
Calvert City, Ky. P15 \$99.00
Inagara Falls, N.Y. P15 99.00
Keokuk, Iowa Open-hearth & Fdry, \$9 freight allowed K2 103.50
Keokuk, Iowa O.H. & Fdry, 12½ lb piglets, 16% Si, max fr'gt allowed up to \$9, K2 106.50

LOW PHOSPHORUS PIG IRON, Gross Ton

Lyles, Tenn. T3 (Phos. 0.035% max) \$78.50
Rockwood, Tenn. T3 (Phos. 0.035% max) 78.50
Troy, N.Y. R2 (Phos. 0.035% max) 74.00
Philadelphia, deld. 82.67
Cleveland A7 (Intermediate) (Phos. 0.036-0.075% max) 71.00
Duluth I-3 (Intermediate) (Phos. 0.036-0.075% max) 71.00
Erie, Pa. I-3 (Intermediate) (Phos. 0.036-0.075% max) 71.00
Nevele Island, Pa. P6 (Intermediate) (Phos. 0.036-0.075% max) 71.00

Warehouse Steel Products

Representative prices, per pound, subject to extras, f.o.b. warehouse. City delivery charges are 15 cents per 100 lb except: Moline, Norfolk, Richmond, Washington, 20 cents; Baltimore, Boston, Los Angeles, New York, Philadelphia, Portland, Spokane, San Francisco, 10 cents; Atlanta, Chattanooga, Houston, Seattle, no charge.

	SHEETS		STRIP		BARS		Standard	PLATES	
	Hot-Rolled	Cold-Rolled	Gal. 10 Ga.†	Stainless Type 302	H.R. Rounds	C.F. Rds.‡	H.R. Alloy 4140††§	Structural Shapes	Carbon Floor
Atlanta	8.59§	9.86§	9.68	8.64	9.01	10.68	9.05	8.97	10.90
Baltimore	8.28	8.88	9.68	8.76	9.06	11.34 #	15.18	8.66	10.14
Birmingham	8.18	9.45	11.07	8.23	8.60	10.57	8.64	8.56	10.70
Boston	9.38	10.44	11.45	9.42	9.73	12.90 #	15.28	9.63	11.20
Buffalo	8.40	9.00	10.07	8.50	8.80	10.90 #	15.00	8.90	10.45
Chattanooga	8.35	9.69	9.65	8.40	8.77	10.46	8.88	8.80	10.66
Chicago	8.20	9.45	10.10	8.23	8.60	8.80	14.65	8.64	9.88
Cincinnati	8.34	9.48	10.10	8.54	8.92	9.31	14.96	9.18	10.21
Cleveland	8.18	9.45	10.20	8.33	8.69	10.80 #	14.74	9.01	10.11
Dallas	7.50	8.80	9.65	7.65	7.60	11.01	9.00	9.45	10.70
Denver	9.38	11.75	10.45	9.41	9.78	11.10	7.65	8.45	9.70
Detroit	8.43	9.70	10.45	8.58	8.90	9.15	14.91	9.18	10.13
Erie, Pa.	8.20	9.45	9.95¹⁰	8.50	8.75	9.05¹⁰	9.00	8.85	10.10
Houston	7.10	8.40	8.45	7.25	7.20	11.10	13.50	7.25	9.30
Jackson, Miss.	8.52	9.79	10.45	8.57	8.94	10.68	8.97	8.90	10.74
Los Angeles	9.60	9.40	11.70	57.60	8.70	12.00	8.60	8.55	10.70
Memphis, Tenn.	8.55	9.80	10.45	8.60	8.97	11.96 #	9.01	8.93	10.56
Milwaukee	8.33	9.58	10.23	8.36	8.73	9.03	14.78	8.85	8.69
Moline, Ill.	8.55	9.80	10.45	8.58	8.95	9.15	8.99	8.91	10.01
New York	8.87	10.13	10.56	53.08	9.57	12.76 #	15.09	9.35	9.43
Norfolk, Va.	8.40	9.79	10.46	8.59	9.10	12.00	9.40	8.85	10.35
Philadelphia	8.00	8.90	9.92	52.69	8.65	11.51 #	15.01	8.50	9.75**
Pittsburgh	8.18	9.45	10.45	52.00	8.60	10.80 #	14.65	8.64	8.56
Portland, Oreg.	8.50	11.20	11.55	57.38	8.65	14.50	15.95	8.65	8.30
Richmond, Va.	8.40	9.79	10.46	8.59	9.00	9.41	15.01	9.10	8.93
St. Louis	8.79	10.04	10.71	8.84	9.21	9.66	9.38	9.30	10.49
St. Paul	9.35	10.75	11.00	55.10	9.70	11.31 #	16.10	9.50	9.60
San Francisco	9.95	11.15	12.20	57.38	10.10	14.05	16.35	9.80	9.70
Seattle	9.07	10.33	10.71	57.38	9.74	10.05	16.35	9.57	9.57
South'ton, Conn.	9.95	11.15	12.00	57.38	10.10	14.05	17.20	9.80	9.70
Spokane	8.88	9.79	10.46	8.59	9.56	10.94	9.79	9.26	10.74
Washington	8.88	9.79	10.46	8.59	9.56	10.94	9.79	9.26	10.74

*Prices do not include gage extras; †prices include gage and coating extras; ‡includes 35-cent bar quality extras; §42 in. and under; **½ in. and heavier; ††as annealed; ‡‡over 4 in.; §§over 3 in.; #1 in. round C-1018.
Base quantities, 2000 to 4999 lb except as noted; cold-rolled strip and cold-finished bars, 2000 lb and over except in Seattle, 2000 to 9999 lb, and in Los Angeles, 6000 lb and over; stainless sheets, 8000 lb except in Chicago, New York, Boston, Seattle, Portland, Oreg., 10,000 lb and in San Francisco, 2000 to 4999 lb; hot-rolled products on West Coast, 2000 to 9999 lb, except in Portland, Oreg., 1000 to 9999 lb; §—400 to 9999 lb; §—1000 to 1999 lb; §—2000 to 3999 lb; ¹⁰—2000 lb and over.

Refractories

Fire Clay Brick (per 1000)

High-Heat Duty: Ashland, Grahn, Hayward, Hitchens, Haldeman, Olive Hill, Ky., Athens, Troup, Tex., Beech Creek Clearfield, Curwensville, Lock Haven, Lumber, Orviston, West Decatur, Winburne, Snow Shoe, Pa., Bessemer, Ala., Farber, Mexico, St. Louis, Vandalia, Mo., Ironton, Oak Hill, Parral, Portsmouth, Ohio, Ottawa, Ill., Stevens Pottery, Ga., \$135; Salina, Pa., \$140; Niles, Ohio, \$138; Cutler, Utah, \$165.

Super-Duty: Ironton, Ohio, Vandalia, Mo., Olive Hill, Ky., Clearfield, Salina, Winburne, Snow Shoe, Pa., New Savage, Md., St. Louis, \$175; Stevens Pottery, Ga., \$185; Cutler, Utah, \$233.

Silica Brick (per 1000)

Standard: Alexandria, Claysburg, Mt. Union, Sproul, Pa., Ensley, Ala., Ft. Matilda, Pa., Portsmouth, Ohio, Hawstone, Pa., \$150; Warren, Niles, Windham, Ohio, Hays, Latrobe, Morrisville, Pa., \$155; E. Chicago, Ind., Joliet, Rockdale, Ill., \$160; Lehigh, Utah, \$175; Los Angeles, \$180.

Super-Duty: Sproul, Hawstone, Pa., Niles, Warren, Windham, Ohio, Leslie, Md., Athens, Tex., \$157; Morrisville, Hays, Latrobe, Pa., \$160; E. Chicago, Ind., \$167; Curtner, Calif., \$182.

Semisilica Brick (per 1000)

Clearfield, Pa., \$140; Philadelphia, \$137; Woodbridge, N. J., \$135.

Ladle Brick (per 1000)

Dry Pressed: Alsey, Ill., Chester, New Cumberland, W. Va., Freeport, Johnstown, Merrill Station, Vanport, Pa., Mexico, Vandalia, Mo., Wellsville, Irondale, New Salisbury, Ohio, \$96.75; Clearfield, Pa., Portsmouth, Ohio, \$102.

High-Alumina Brick (per 1000)

50 Per Cent: St. Louis, Mexico, Vandalia, Mo., \$235; Danville, Ill., \$238; Philadelphia, Clear-

field, Pa., \$230; Orviston, Snow Shoe, Pa., \$245.

60 Per Cent: St. Louis, Mexico, Vandalia, Mo., \$295; Danville, Ill., \$298; Clearfield, Orviston, Snow Shoe, Pa., \$305; Philadelphia, \$310.

70 Per Cent: St. Louis, Mexico, Vandalia, Mo., \$335; Danville, Ill., \$338; Clearfield, Orviston, Snow Shoe, Pa., \$345; Philadelphia, \$350.

Sleeves (per 1000)

Reesdale, Johnstown, Bridgeburg, Pa., St. Louis, \$188.

Nozzles (per 1000)

Reesdale, Johnstown, Bridgeburg, Pa., St. Louis, \$310.

Runners (per 1000)

Reesdale, Johnstown, Bridgeburg, Pa., \$234.

Dolomite (per net ton)

Domestic, dead-burned, bulk, Billmeyer, Blue Bell, Williams, Plymouth Meeting, York, Pa., Millville, W. Va., Bettsville, Millersville, Martin, Woodville, Gibsonburg, Nario, Ohio, \$16.75; Thornton, McCook, Ill., \$17; Dolly Sid-ing, Bonne Terre, Mo., \$15.

Magnesite (per net ton)

Domestic, dead-burned, 1/2 in. grains with fines: Chewelah, Wash., Luning, Nev., \$46; 1/2 in. grains with fines: Baltimore, \$73.

Fluorspar

Metallurgical grades, f.o.b. shipping point in Ill., Ky., net tons, carloads, effective CaF₂ content 72.5%, \$37-41; 70%, \$36.40; 60%, \$33-36.50. Imported, net tons, f.o.b. cars point of entry, duty paid, metallurgical grade: European, \$33-34; Mexican, all rail, duty paid, \$25.25-25.75; barge, Brownsville, Tex., \$27.25-27.75.

Metal Powder

(Per pound f.o.b. shipping point in ton lots for minus 100 mesh, except as noted)

Cents

Sponge Iron, Swedish: Deld. east of Mississippi River, ocean bags 23,000 lb and over.. 10.50

F.o.b. Riverton or Camden, N. J., west of Mississippi River. 9.50

Sponge Iron, Domestic, 98 + % Fe: Deld. east of Mississippi River, 23,000 lb and over 10.50

Electrolytic Iron: Melting stock, 99.9% Fe, irregular fragments of 1/2 in. x 1.3 in. 28.00

Annealed, 99.5% Fe.. 36.50

Unannealed (99 + % Fe) 36.00

Unannealed (99 + % Fe) (minus 325 mesh) 59.00

Powder Flakes (minus 16, plus 100 mesh). 29.00

Carbonyl Iron: 98.1-99.9%, 3 to 20 microns, depending on grade, 93.00 - 290.00 in standard 200-lb containers; all minus 200 mesh.

Aluminum:

Atomized, 500-lb drum, freight allowed

Carlots 39.50

Ton lots 41.50

Antimony, 500-lb lots 42.00*

Brass, 5000-lb lots 30.30-45.70†

Bronze, 5000-lb lots 45.70-49.80†

Copper:

Electrolytic 14.75*

Reduced 14.75*

Lead 7.50*

Manganese:

Minus 35 mesh 64.00

Minus 100 mesh 70.00

Minus 200 mesh 75.00

Nickel, unannealed 74.00

Nickel-Silver, 5000-lb lots 47.80-52.60†

Phosphor-Copper, 5000-lb lots 57.80

Copper (atomized) 5000-lb lots 38.30-46.80†

Silicon 47.50

Solder 7.00*

Stainless Steel, 304 \$1.07

Stainless Steel, 316 \$1.26

Tin 14.50*

Zinc, 5000-lb lots 17.50-30-70†

Tungsten: Dollars

Melting grade, 99% 60 to 200 mesh, nominal; 1000 lb and over.. 3.15

Less than 1000 lb .. 3.30

Chromium, electrolytic 99.8% Cr min

metallic basis 5.00

*Plus cost of metal. †Depending on composition. ‡Depending on mesh.

Electrodes

Threaded with nipple; unboxed, f.o.b. plant

GRAPHITE

Inches		Per 100 lb
Diam	Length	
2	24	\$60.75
2 1/2	30	39.25
3	40	37.00
4	40	35.00
5 1/2	40	34.75
6	60	31.50
7	60	28.25
8, 9, 10	60	28.00
12	72	26.75
14	60	26.75
16	72	26.75
17	60	26.25
18	72	26.25
20	72	25.25
24	84	26.00

CARBON

8	60	13.30
10	60	13.00
12	60	12.95
14	60	12.85
14	72	11.95
14	60	11.85
17	72	11.40
20	84	11.40
20	90	11.00
24	72, 84	11.25
24	96	10.95
30	84	11.05
40, 35	110	10.70
40	100	10.70

Ores

Lake Superior Iron Ore

(Prices effective for the 1958 shipping season, gross ton, 51.50% iron natural, rail of vessel, lower lake ports.)

Mesabi bessemer \$11.60
Mesabi nonbessemer 11.45
Old Range bessemer 11.85
Old Range nonbessemer 11.70
Open-hearth lump 12.70
High phos. 11.45

The foregoing prices are based on upper lake rail freight rates, lake vessel freight rates, handling and unloading charges, and taxes thereon, which were in effect Jan. 30, 1957, and increases or decreases after that date are absorbed by the seller.

Eastern Local Iron Ore

Cents per unit, deld. E. Pa.

New Jersey, foundry and basic 62-64% concentrates 25.00-27.00

Foreign Iron Ore

Cents per unit, c.i.f. Atlantic ports

Swedish basic, 65% 25.00
N. African hematite (spot) nom.
Brazilian iron ore, 68-69% 27.00

Tungsten Ore

Net ton, unit

Foreign wolframite, good commercial quality \$11.80-12.00*
Domestic, concentrates f.o.b. milling points 20.00

*Before duty.

Manganese Ore

Mn 46-48%, Indian (export tax included), \$135 per long ton unit, c.i.f. U. S. ports, duty for buyer's account; other than Indian, nominal; contracts by negotiation.

Chrome Ore

Gross ton, f.o.b. cars New York, Philadelphia, Baltimore, Charleston, S. C., plus ocean freight differential for delivery to Portland, Oreg., Tacoma, Wash.

Indian and Rhodesian

48% 3:1 \$50.00
48% 2.8:1 48.00
48% no ratio 39.00

South African Transvaal

48% no ratio \$37.00
44% no ratio 27.00

Turkish

48% 3:1 \$55.00

Domestic

Rail nearest seller

18% 3:1 39.00

Molybdenum

Sulfide concentrate, per lb of Mo content, mines, unpacked \$1.18

Antimony Ore

Per short ton unit of Sb content, c.i.f. seaboard

55-60% \$2.50-2.60
60-65% 2.60-2.90

Vanadium Ore

Cents per lb V₂O₅

Domestic 31.00

Metallurgical Coke

Price per net ton

Beehive Ovens

Connellsville, Pa., furnace \$14.75-15.75

Connellsville, Pa., foundry 18.00-18.50

Oven Foundry Coke

Birmingham, ovens \$28.85

Cincinnati, deld. 31.84

Buffalo, ovens 30.50

Camden, N. J., ovens 29.50

Detroit, ovens 30.50

Pontiac, Mich., deld. 32.45

Saginaw, Mich., deld. 34.03

Erie, Pa., ovens 30.50

Everett, Mass., ovens:

New England, deld. 31.55*

Indianapolis, ovens 29.75

Ironton, Ohio, ovens 29.00

Cincinnati, deld. 31.84

Kearny, N. J., ovens 29.75

Milwaukee, ovens 30.50

Neville Island (Pittsburgh), Pa., ovens 29.25

Painesville, Ohio, ovens 30.50

Cleveland, deld. 32.69

Philadelphia, ovens 29.50

St. Louis, ovens 31.50

St. Paul, ovens 29.75

Chicago, deld. 33.29

Swedeland, Pa., ovens 29.50

Terre Haute, Ind., ovens 29.75

*Or within \$4.85 freight zone from works.

Coal Chemicals

Spot, cents per gallon, ovens

Pure benzene 36.00

Toluene, one deg 29.50

Industrial xylene 32.00-34.00

Per ton, bulk, ovens

Ammonium sulfate \$32.00-34.00

Cents per pound, producing point

Phenol: Grade 1, 17.50; Grade 2-3, 15.50;

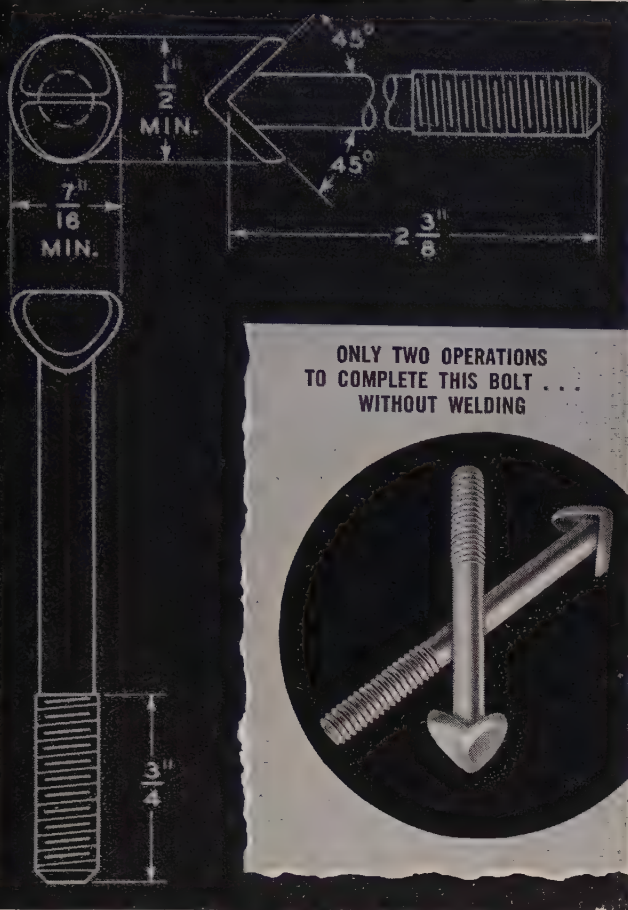
Grade 4, 17.50; Grade 5, 16.50; Grade 6, 14.50.

Imported Steel

(Base per 100 lb, landed, duty paid, based on current ocean rates. Any increase in these rates is for buyer's account. Source of shipment: Western continental European countries.)

	North Atlantic	South Atlantic	Gulf Coast	West Coast
Deformed Bars, Intermediate, ASTM-A 305 ..	\$5.53	\$5.33	\$5.33	\$5.73
Bar Size Angles ..	5.73	5.58	5.58	5.99
Structural Angles ..	5.73	5.58	5.58	5.99
I-Beams ..	5.88	5.72	5.72	6.02
Channels ..	5.88	5.72	5.72	6.02
Plates (basic bessemer) ..	6.79	6.62	6.62	6.94
Sheets, H.R.	8.25	8.20	8.20	8.50
Sheets, C.R. (drawing quality) ..	9.00	8.95	8.95	9.25
Furring Channels, C.R., 1000 ft. 3/4 x 0.30 lb per ft ..	25.71	25.59	25.59	26.46
Barbed Wire (†) ..	6.65	6.65	6.65	7.00
Merchant Bars ..	6.23	6.07	6.07	6.43
Hot-Rolled Bands ..	7.20	7.15	7.15	7.55
Wire Rods, Thomas Commercial No. 5 ..	6.73	6.73	6.73	7.13
Wire Rods, O.H. Cold Heading Quality No. 5 ..	7.07	7.07	7.07	7.47
Bright Common Wire Nails (\$) ..	8.02	8.02	7.92	8.20

†Per 82 lb, net, reel. \$Per 100-lb kegs, 20d nails and heavier.



made in one piece for less by cold heading

Functionally right for its purpose, this angle iron bolt would be expensive to produce by conventional methods. But Progressive made it by cold heading—the only practical way to produce the bolt in one piece. Only two operations—heading and threading—completed the bolt. Avoids a costly welding operation too.

You can make savings like this with Progressive cold heading—and get naturally stronger fasteners. Write for more case histories in our “Bank Book of Savings in Cold Heading.”

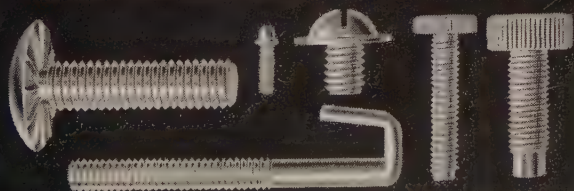
MACHINE SCREWS AND NUTS, SEMS FASTENERS,
SLOTTED TAPPING SCREWS AND PHILLIPS HEAD SCREWS

THE PROGRESSIVE MFG. CO.

Division of The Torrington Company

76 Norwood St., Torrington, Connecticut

SAVE ON PARTS LIKE THESE



AMONG OPERATIONS PERFORMED BY PROGRESSIVE are heading and extruding simultaneously; flattening; piercing; drilling; bending; pointing; fluted or diamond knurling; trimming; turning tenons, shoulders or recesses; struck or sawed slotting; notching.



... so Buehner Block Company
specifies Yellow Strand

“POWERSTEEL”

To pull 60 tons of concrete blocks from this super heated kiln, Buehner Block Company, Salt Lake City, Utah, selected 350' of 5/16" 6 x 31 Yellow Strand “POWERSTEEL.” The line is subjected to the corrosive effect of hot steam, weathering, alkalis and heavy shock loads, as well as long, steady pulls.

“POWERSTEEL” Wire Rope is the rope to specify when extra strength is necessary. It is made from wire having the highest carbon content of any B & B rope. It is stocked by Broderick & Bascom Distributors all over the U. S. A. This is your assurance of speedy delivery of the best wire rope, when and where you need it.

Your B & B Distributor will be glad to tell you more about “POWERSTEEL” and the complete family of Yellow Strand Wire Ropes. Call him today! Broderick & Bascom Rope Co., 4203 Union Blvd., St. Louis 15, Mo.

Yellow Strand Wire Rope



Ferroalloys

MANGANESE ALLOYS

Spiegeleisen: Carlot, per gross ton, Palmerton, Neville Island, Pa., 21-23% Mn, \$105; 19-21% Mn, 1-3% Si, \$102.50; 16-19% Mn, \$100.50.

Standard Ferromanganese: (Mn 74-76%, C 7% approx.) Base price per net ton; \$245, Johnstown, Duquesne, Sheridan, Neville Island, Pa.; Alloy, W. Va.; Ashtabula, Marietta, O.; Sheffield, Ala.; Portland, Oreg. Add or subtract \$2 for each 1% or fraction thereof of contained manganese over 76% or under 74%, respectively. (Mn 79-81%). Lump \$253 per net ton, f.o.b. Anaconda or Great Falls, Mont. Add \$2.60 for each 1% above 81%; subtract \$2.60 for each 1% below 79%, fractions in proportion to nearest 0.1%.

High-Grade Low-Carbon Ferromanganese: (Mn 85-90%). Carload, lump, bulk, max 0.07% C, 35.1c per lb of contained Mn, carload packed 36.4c, ton lots 37.9c, less ton 39.1c. Delivered. Deduct 1.5c for max 0.15% C grade from above prices, 3c for max 0.03% C, 3.5c for max 0.05% C, and 6.5c for max 75% C—max 7% Si. **Special Grade:** (Mn 90% min, C 0.07% max, P 0.06% max). Add 2.05c to the above prices. Spot, add 0.25c.

Medium-Carbon Ferromanganese: (Mn 80-85%, C 1.25-1.5%, Si 1.5% max). Carload, lump, bulk, 25.5c per lb of contained Mn, packed, carload 26.8c, ton lot 28.4c, less ton 29.6c. Delivered. Spot, add 0.25c.

Manganese Metal: 2" x D (Mn 95.5% min, Fe 2% max, Si 1% max, C 0.2%). Carload, lump, bulk, 45c per lb of metal; packed, 45.75c; ton lot 47.25c; less ton lot 49.25c. Delivered. Spot, add 2c.

Electrolytic Manganese Metal: Min carload, 34c; 2000 lb to min carload, 36c; 500 lb to 1999 lb, 38c; 50 lb cans, add 0.5c per lb. Premium for hydrogen-removed metal, 0.75c per lb. Prices are f.o.b. cars, Knoxville, Tenn., freight allowed to St. Louis or any point east of Mississippi; or f.o.b. Marietta, O., freight allowed.

Silicomanganese: (Mn 65-68%). Contract, lump, bulk 1.50% C grade, 18-20% Si, 12.8c per lb of alloy. Packed, c.l. 14c, ton 14.45c, less ton 14.45c, f.o.b. Alloy, W. Va.; Ashtabula, Marietta, O.; Sheffield, Ala.; Portland, Oreg. For 2% C grade, Si 15-17%, deduct 0.2% from above prices. For 3% C grade Si 12-14.5%, deduct 0.4c from above prices. Spot, add 0.25c.

TITANIUM ALLOYS

Ferrotitanium, Low-Carbon: (Ti 20-25%, Al 3.5% max, Si 4% max, C 0.10% max). Contract, ton lot, 2" x D, \$1.50 per lb of contained Ti; less ton \$1.65. (Ti 38.43%, Al 8% max, Si 4% max, C 0.10% max). Ton lot \$1.35, less ton \$1.37, f.o.b. Niagara Falls, N. Y., freight allowed to St. Louis. Spot, add 5c.

Ferrotitanium, High-Carbon: (Ti 15-18%, C 6-8%). Contract \$200 per ton, f.o.b. Niagara Falls, N. Y., freight allowed to destinations east of Mississippi River and north of Baltimore and St. Louis.

Ferrotitanium, Medium-Carbon: (Ti 17-21%, C 2-4.5%). Contract \$225 per ton, f.o.b. Niagara Falls, N. Y., freight not exceeding St. Louis rate allowed.

CHROMIUM ALLOYS

High-Carbon Ferrochrome: Contract, c.l. lump, bulk 28.75c per lb of contained Cr; c.l. packed 30.30c, ton lot 32.05c; less ton 33.45c. Delivered. Spot, add 0.25c.

Low-Carbon Ferrochrome: Cr 63-66% (Simplex), carload, lump, bulk, C 0.025% max, 36.75c per lb contained Cr; 0.010% max, 37.75c. Ton lot, add 3.5c; less ton, add 5.2c. Delivered.

Cr 67-71%, carload, lump, bulk, C 0.02% max, 41.00c per lb contained Cr; 0.025% max, 39.75c; 0.05% max, 39.00c; 0.10% max, 38.50c; 0.20% max, 38.25c; 0.50% max, 38.00c; 1.0% max, 37.75c; 1.5% max, 37.50c; 2.0% max, 37.25c. Ton lot, add 3.4c; less ton lot, add 5.1c. Delivered.

Foundry Ferrochrome, High-Carbon: (Cr 61-66%, C 5-7%, Si 7-10%). Contract, c.l., 2 in. x D, bulk 30.05c per lb of contained Cr. Packed, c.l. 31.65c, ton 33.45c, less ton 34.95c. Delivered. Spot, add 0.25c.

Foundry Ferrosilicon Chrome: (Cr 50-54%, Si 28-32%, C 1.25% max). Contract, carload, packed, 8M x D, 21.25c, per lb of alloy, ton lot 22.50c; less ton lot 23.70c. Delivered. Spot, add 0.25c.

Ferrochrome-Silicon: Cr 39-41%, Si 42-45%, C 0.05% max or Cr 33-36%, Si 45-48%, C 0.05% max. Carload, lump, bulk, 3" x down and 2" down, 27.50c per lb contained Cr, 14.20c per lb contained Si. 0.75% x down, 28.65c per lb contained Cr, 14.20c per lb contained Si. Delivered.

Chromium Metal Electrolytic: Commercial grade (Cr 99.8% min, metallic basis, Fe 0.2% max). Contract, carlot, packed 2" x D plate (about 1/8" thick) \$1.29 per lb, ton lot \$1.31, less ton lot \$1.33. Delivered. Spot, add 5c.

VANADIUM ALLOYS

Ferrovanadium: Open-hearth grade (V 50-55%, Si 8% max, C 3% max). Contract, any quantity, \$3.20 per lb of contained V. Delivered. Spot, add 10c. **Special Grade:** (V 50-55% or 70-75%, Si 2% max, C 0.5% max) \$3.30. **High Speed Grade:** (V 50-55%, or 70-75%, Si 1.50% max, C 0.20% max) \$3.40.

Grainal: Vanadium Grainal No. 1 \$1.05 per lb; No. 79, 50c, freight allowed.

Vanadium Oxide: Contract less carload lot, packed, \$1.38 per lb contained V₂O₅, freight allowed. Spot, add 5c.

SILICON ALLOYS

25-30% Ferrosilicon: Contract, carload, lump, bulk, 20.0c per lb of contained Si. Packed 21.40c; ton lot 22.50c, f.o.b. Niagara Falls, N. Y., freight not exceeding St. Louis rate allowed.

50% Ferrosilicon: Contract, carload, lump, bulk, 14.20c per lb of contained Si. Packed c.l. 16.70c, ton lot 18.15c, less ton 19.80c, f.o.b. Alloy, W. Va.; Ashtabula, Marietta, O.; Sheffield, Ala.; Portland, Oreg. Spot, add 0.45c.

Low-Aluminum 50% Ferrosilicon: (Al 0.40% max). Add 1.45c to 50% ferrosilicon prices.

65% Ferrosilicon: Contract, carload, lump, bulk, 15.25c per lb contained silicon. Packed, c.l. 17.25c, ton lot 19.05c; less ton 20.4c. Delivered. Spot, add 0.35c.

75% Ferrosilicon: Contract, carload, lump, bulk, 16.4c per lb of contained Si. Packed, c.l. 18.30c, ton lot 19.95c, less ton 21.2c. Delivered. Spot, add 0.3c.

90% Ferrosilicon: Contract, carload, lump, bulk, 19.5c per lb of contained Si. Packed, c.l. 21.15c, ton lot 22.55c, less ton 23.6c. Delivered. Spot, add 0.25c.

Silicon Metal: (98% min Si, 0.75% max Fe, 0.07% max Ca). C.l. lump, bulk, 22.00c per lb of Si. Packed, c.l. 23.65c, ton lot 24.95c, less ton 25.95c. Add 0.5c for max 0.03% Ca grade. Deduct 0.5c, for max 1% Fe grade analyzing min 99.75% Si; 0.75c for max 1.25% Fe grades analyzing min 96.75% Si. Spot, add 0.25c.

Alsifer: (Approx 20% Al, 40% Si, 40% Fe). Contract, basis f.o.b. Niagara Falls, N. Y., lump, carload, bulk, 10.65c per lb of alloy; ton lot, packed, 11.8c.

ZIRCONIUM ALLOYS

12-15% Zirconium Alloy: (Zr 12-15%, Si 39-43%, C 0.20% max). Contract, c.l. lump, bulk 9.25c per lb of alloy. Packed, c.l. 10.45c, ton lot 11.6c, less ton 12.45c. Delivered. Spot, add 0.25c.

35-40% Zirconium Alloy: Zr 35-40%, Si 47-52%, Fe 8-12%, C 0.50% max). Contract, carload, lump, packed 27.25c per lb of alloy, ton lot 28.4c, less ton 29.65c. Freight allowed. Spot, add 0.25c.

BORON ALLOYS

Ferrobore: (B 17.50% min, Si 1.50% max, Al 0.50% max, C 0.50% max). Contract, 100 lb or more 1" x D, \$1.20 per lb of alloy; less than 100 lb \$1.30. Delivered. Spot, add 5c. F.o.b. Washington, Pa., prices, 100 lb and over are as follows: Grade A (10-14% B) 85c per lb; Grade B (14-18% B) \$1.20; Grade C (19% min B) \$1.50.

Borosi: (3 to 4% B, 40 to 45% Si). Carload, bulk, lump, or 3" x D, \$5.25 per lb of contained B. Packed, carload \$5.40, ton to c.l. \$5.50, less ton \$5.60. Delivered.

Bortam: (B 1.5-1.9%). Ton lot, 45c per lb; less than ton lot, 50c per lb.

Carbortam: (B 1 to 2%). Contract, lump, carload 9.50c per lb f.o.b. Suspension Bridge, N. Y., freight allowed same as high-carbon ferrotitanium.

CALCIUM ALLOYS

Calcium-Manganese-Silicon: (Ca 16-20%, Mn 14-18% and Si 53-59%). Contract, carload, lump, bulk 23c per lb of alloy, carload packed, 24.25c, ton lot 26.15c, less ton 27.15c. Delivered. Spot, add 0.25c.

Calcium-Silicon: (Ca 30-33%, Si 60-65%, Fe 1.5-3%). Contract, carload, lump, bulk 24c per lb of alloy, carload packed 25.65c, ton lot 27.95c, less ton 29.45c. Delivered. Spot, add 0.25c.

BRICQUETTED ALLOYS

Chromium Briquets: (Weighing approx 3 3/4 lb each and containing 2 lb of Cr). Contract, carload, bulk 19.60c per lb of briquet, carload packed in box pallets 19.80c, in bags 20.70c; 3000 lb to c.l. in box pallets 21.00c; 2000 lb to c.l. in bags 21.90c; less than 2000 lb in bags 22.80c. Delivered. Add 0.25c for notching. Spot, add 0.25c.

Ferromanganese Briquets: (Weighing approx 3 lb and containing 2 lb of Mn). Contract, carload, bulk 14.8c per lb of briquet; c.l., packed, pallets 15c, bags 16c; 3000 lb to c.l., pallets 16.2c; 2000 lb to c.l., bags, 17.2c; less ton 18.1c. Delivered. Add 0.25c for notching. Spot, add 0.25c.

Silicomanganese Briquets: (Weighing approx 3 1/2 lb and containing 2 lb of Mn and approx 1/2 lb of Si). Contract, c.l. bulk 15.1c per lb of briquet; c.l. packed, pallets, 15.3c; bags 16.3c, 3000 lb to c.l., pallets, 16.5c; 2000 lb to c.l., bags 17.5c; less ton 18.4c. Delivered. Add 0.25c for notching. Spot, add 0.25c.

Silicon Briquets: (Large size—weighing approx 5 lb and containing 2 lb of Si). Contract, carload, bulk 7.7c per lb of briquet; packed, pallets, 7.9c; bags 8.9c; 3000 lb to c.l., pallets 9.5c; 2000 lb to c.l., bags 10.5c; less ton 11.4c. Delivered. Spot, add 0.25c. (Small size—weighing approx 2 1/2 lb and containing 1 lb of Si). Carload, bulk 7.85c; Packed, pallets 8.05c; bags 9.05c; 3000 lb to c.l., pallets 9.65c; 2000 lb to c.l., bags, 10.65c; less ton 11.55c. Delivered. Add 0.25c for notching, small size only. Spot, add 0.25c.

Molybdenic-Oxide Briquets: (Containing 2 1/2 lb of Mo each). \$1.41 per pound of Mo contained, f.o.b. Langeloth, Pa.

TUNGSTEN ALLOYS

Ferrotungsten: (70-80%), 5000 lb W or more \$2.15 per lb (nominal) of contained W. Delivered.

OTHER FERROALLOYS

Ferrocolumbium: (Cb 50-60%, Si 8% max, C 0.4% max). Ton lots 2" x D, \$4 per lb of contained Cb; less ton lots, \$4.05 (nominal). Delivered.

Ferrotantalum—Columbium: (Cb 40% approx, Ta 20% approx, and Cb plus Ta 60% min, C 0.30% max). Ton lot 2" x D, \$3.80 per lb of contained Cb plus Ta, delivered; less ton lot \$3.85 (nominal).

SMZ Alloy: (Si 60-65%, Mn 5-7%, Zr 5.7%, Fe 20% approx). Contract, c.l. packed 1/2-in. x 12 M 20.00c per lb of alloy, ton lot 21.15c, less ton 22.40c. Delivered. Spot, add 0.25c.

Graphidox No. 5: (Si 48-52%, Ca 5-7%, Ti 9-11%). C.l. packed, 19c per lb of alloy, ton lot 20.15c; less ton lot 21.4c, f.o.b. Niagara Falls, N. Y.; freight allowed to St. Louis.

V-5 Foundry Alloy: (Cr 38-42%, Si 17-19%, Mn 8-11%). C.l. packed 18.1c per lb of alloy; ton lot 19.55c; less ton lot 20.8c, f.o.b. Niagara Falls, N. Y.; freight allowed to St. Louis.

Simanal: (Approx 20% each Si, Mn, Al; bal Fe). Lump, carload, bulk 18.50c. Packed c.l. 19.50c, 2000 lb to c.l. 20.50c, less than 2000 lb 21c per lb of alloy. Delivered.

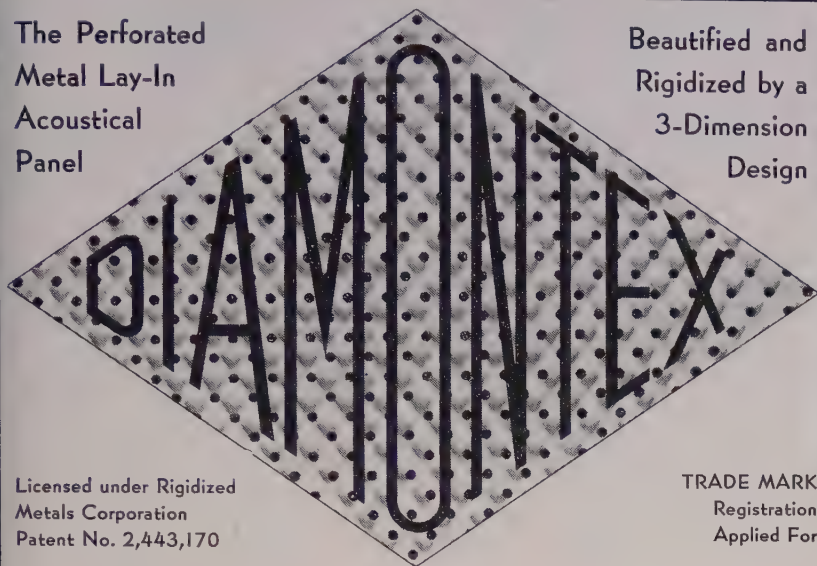
Ferrophosphorus: (23-25% based on 24% P content with unitage of \$4 for each 1% of P above or below the base); carload, f.o.b. sellers' works, Mt. Pleasant, Siglo, Tenn., \$110 per gross ton.

Ferromolybdenum: (55-75%). Per lb of contained Mo, in 200-lb container, f.o.b. Langeloth and Washington, Pa. \$1.68 in all sizes except powdered which is \$1.74.

Technical Molybdenic-Oxide: Per lb of contained Mo, in cans, \$1.39; in bags, \$1.35, f.o.b. Langeloth and Washington, Pa.

The Perforated
Metal Lay-In
Acoustical
Panel

Beautified and
Rigidized by a
3-Dimension
Design



Licensed under Rigidized
Metals Corporation
Patent No. 2,443,170

TRADE MARK
Registration
Applied For



*Easily Installed and Removed
Versatile and Decorative*

A New Concept in Acoustical Ceilings

... which meets every noise-control requirement in Schools, Hospitals, Restaurants, Food Markets, Bowling Alleys, Work Rooms, Offices, etc. with unsurpassed Appearance, Economy, Efficiency, Incombustibility and Ease of Installation.

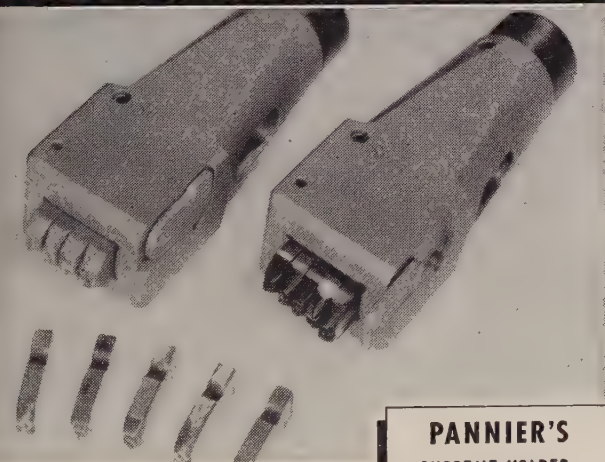
A NEW illustrated bulletin, No. 47, gives complete information regarding DIAMONTEX Acoustical Panels and their application to either new or existing buildings. Write, today, for a free copy.

The distinctive 3-dimension rigidizing design creates a decorative diamond-shaped pattern on installed DIAMONTEX Panels, which varies 90-degrees in direction according to the manner in which the panels are laid in the supporting grid structure, as shown in the illustration above.

Provision is made, also, for applying DIAMONTEX Panels to existing acoustical ceilings by means of either screws or toggle bolts and a special type of molding which covers the heads of the screws or bolts after they are in place.

DIAMOND MANUFACTURING CO. WYOMING (Wilkes-Barre Area) PA.

ANOTHER **PANNIER** MASTER MARKER!



New Roto-Pin type lock is integral part of *all* Pannier Supreme Holders ... eliminates loose, bent, dropped, or lost pins ... flip it open to change type ... flip it back to securely lock type in clear-marking position.

Write for
complete data.

PANNIER'S SUPREME HOLDER WITH ROTO-PIN LOCK

Safe, fast type changing. Holder in variety of styles. Machined from High-Grade Bar Tool Steel. Hardened anvil maintains type alignment. Striking Head of Tool Steel ... Replaceable to add long service life to Holder.

MARKING DEVICES
THE PANNIER CORPORATION

220 Pannier Building • FAirfax 1-5185 • Pittsbu^{rg}h 12, Pa.
Offices: Los Angeles • Chicago • Cleveland • Philadelphia • Birmingham



ELECTRIC FURNACE STEEL CASTINGS

CARBON • ALLOY • STAINLESS

"C" Steel Castings possess many qualities other than the strength of steel. They provide for more freedom and efficiency of design, better weight-strength ratio and greater fatigue resistance, i.e., longer life and less replacement. "C" Steel Castings

SAND OR SHELL MOLDED

are foundry engineered from pattern to finished casting. They require minimum machining and assembly costs. Perhaps you can utilize the advantages of "C" Steel Castings in your products to reduce costs and gain additional quality and buyers' appeal. Our engineering staff is at your service. Write, phone or call.

CRUCIBLE STEEL CASTING CO.
LANSDOWNE 2, PENNA.

Sluggishness Pushes Scrap Down

Upturn in steelmaking operations fails to stimulate mill buying. Purchases limited to small lots. STEEL's composite on the prime grade slips to \$31.83, off another \$1

Scrap Prices, Page 146

Pittsburgh — Primary grades dropped \$1 a ton on purchases by a local mill. No. 1 dealer bundles went for \$32 a ton, No. 1 factory bundles \$35. Fisher Body Div.'s factory bundles were sold to a Pittsburgh broker at \$35.85, 75 cents less than they brought last month. It's thought brokers are competing among themselves for No. 1 factory bundles in anticipation of a purchase by a mill on the fringe of this area. About 200 tons of low phos punchings and plates were sold to a local consumer at \$36.

Philadelphia—Some No. 1 heavy melting and turnings have been bought at the lower prices recently established. While one purchase of No. 1 was at \$34, a larger tonnage was moved at \$35. Short shoveling,

machine shop, and heavy turnings sold \$2 to \$3 a ton below prices quoted a week ago. Turnings and borings have been dull, with prices nominal. No. 2 steel scrap is slow and weak.

One eastern Pennsylvania mill, after holding up shipments, is again taking deliveries.

The Pennsylvania Railroad closes May 6 on 19,145 tons, including 5000 tons of No. 1 railroad heavy melting.

A boat loading for export has been hampered by waterfront strikes; three cargoes are affected.

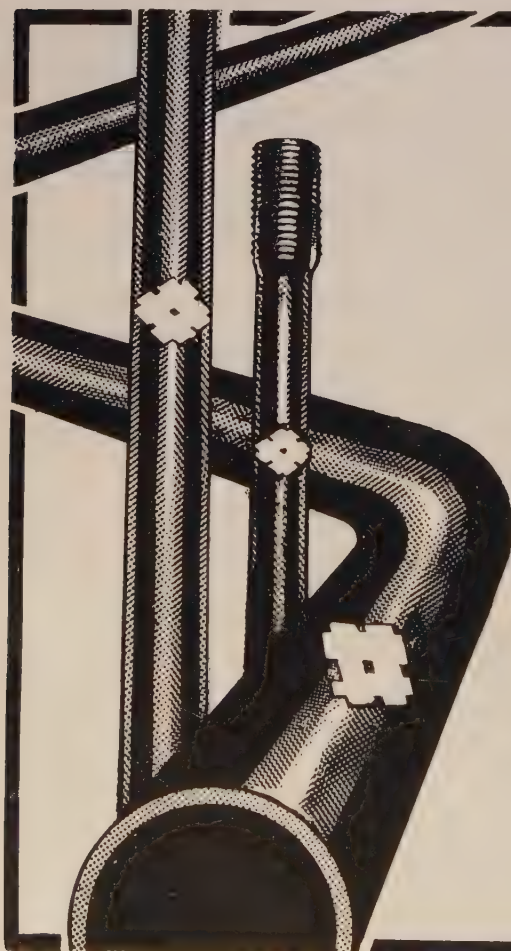
New York — Steel scrap prices are easier with buying light—notably No. 2 heavy melting and bundles. Brokers are paying \$29-\$30 for No. 1 heavy melting, shipping point, for domestic shipment,

but little tonnage is moving. Short shoveling turnings are slow, and with other turnings grades are off \$1 a ton. Unstripped motor blocks are off \$2.

Boston—No. 1 cupola and machinery cast are off \$1 a ton, shipping point, and No. 1 heavy melting is down a like amount, brokers paying \$23-\$24. All grades for domestic shipment are slow, notably No. 2 bundles and turnings. Prices on turnings are nominal at the lowest point in recent years.

Chicago—Lack of sales keeps this market from establishing firm prices. Further softening is indicated. Railroad grades are generally being quoted \$1 to \$2 a ton lower than those of recent sales. Last midweek, brokers were awaiting a major mill's entry into the market to establish firm price levels.

Cleveland—Only 13,000 tons of industrial bundles were offered in the auto lists from four district plants. They were taken by several bidders at prices \$2 to \$3 below those of a month ago. Brokers considered \$31 to \$32 a representative price.



*Sumitomo
Serves
the World
in*

*Oil country Tubular goods
E Line Pipe*

Now available —
Seamless Steel Pipes up to 14" O.D.

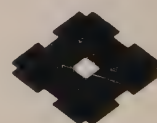
SUMITOMO METAL INDUSTRIES, LTD.

Head Office : 31, Kawaramachi 4-chome, Higashi-ku, Osaka, Japan

Cable Address : "SUMITOMOMETAL OSAKA"

Tokyo Branch : Shin-Marunouchi Bldg., 4-1 Marunouchi 1-chome,
Chuo-ku, Tokyo, Japan

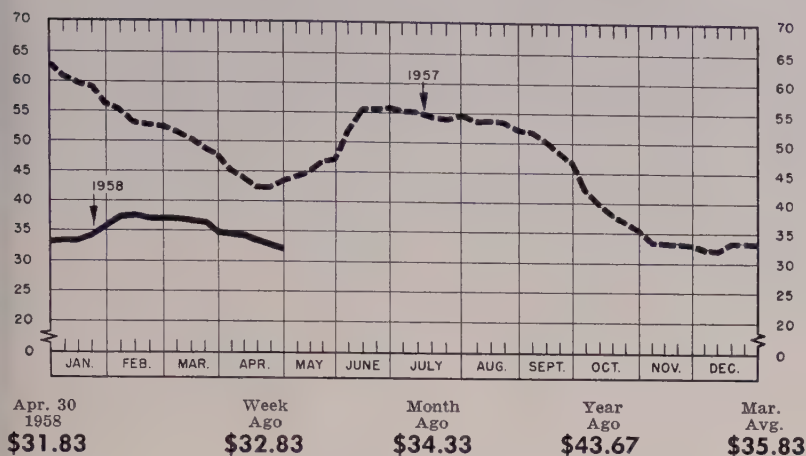
Cable Address : "SUMITOMOMETAL TOKYO"



ESTABLISHED
1897

STEELMAKING SCRAP PRICE COMPOSITE

Based on No. 1 heavy melting grade at Pittsburgh, Chicago, and eastern Pennsylvania—Compiled by STEEL.



Over-all, the market is holding, but with buying lacking, quoted prices are nominal. About the most promising thing in the market: A bottom probably has been reached—at least temporarily.

Youngstown—Scrap remains in the doldrums. Consumers aren't buying important tonnages. Considerable material is being collected from farms and homes and is moving into scrapyards.

Detroit—Local auto lists closed last week \$3 to \$4 down from prices a month ago. Brokers and dealers think the small tonnage—34 cars less than in the March lists—kept prices from sinking even lower. No open orders have been reported, and there were only two buyers for the listed carloads.

One buyer will be able to save a bit on a closed order for Canada which calls for bundles at a higher price than the last list closings.

Brokers' buying prices are holding at unchanged levels, and the trade expects the market will continue fairly steady for several weeks.

Buffalo—Cast iron scrap developed new weakness here last week. Cupola and No. 1 machinery cast were marked down \$2 a ton. There also was another cut of \$1 on machine shop turnings.

Dealers await placement of May mill business to clarify the price situation on the principal steel grades. This market, though, has pretty much discounted the lower prices which the mills are likely to offer on tonnage if they do enter the market this month.

The mills have plenty of scrap on hand, and because of low operations, they are not eager to buy more than token tonnages. Blast furnace material continues sluggish.

Cincinnati—Scrap is marking time here. Some traders think prices will go off another \$1 a ton when the mills enter the market for May tonnage. Brokers say early industrial lists point in that direction. Currently prices are holding.

St. Louis—Scrap is moving slowly here. Not much material is coming to the market, and demand is poor. There is plenty in inventory. Little tonnage is being shipped out of the area.

Slight price drops are reported on clean auto cast and stove plates; both grades are off \$1 a ton.

Birmingham—Although there is a little activity in the cast iron grades, the over-all movement of scrap is limited, and the market appears weak. One large consumer of open-hearth material has advised brokers it will receive limited shipments on outstanding orders. Exports are dull.

Houston—Support for the scrap market is lacking here. Only one area mill has indicated it will do any buying during May, and that likely will be limited to crushed short shoveling turnings and specialty items. Cast iron scrap is also in poor demand.

The export market remains quiet. Mexican demand probably will not extend across the border this month.

San Francisco—Steel scrap prices are steady here, but the market undertone continues weak. If any

change develops, it is likely to be on the downside, in the opinion of local scrap interests.

Los Angeles—Despite the absence of significant buying, scrap prices moved up an average of \$2 a ton last week, dealers describing the action as an adjustment. No. 1 heavy melting rose to \$34 and No. 2 heavy melting to \$32. Other specifications advanced similarly.

Seattle—Scrap prices are expected to decline another \$3 a ton this week, lowering quotations on No. 1 heavy melting to \$27, on No. 2 to \$26, and No. 1 bundles to \$21. Little material is coming into dealers' yards. Export interest is lagging.

Iron Ore . . .

Iron Ore Prices, Page 140

The iron ore shipping season on the Great Lakes is opening up slowly. Indications are it will be mid-May before a representative number of carriers is in service.

Last week, one of the larger vessel operators established rates (same as last year's) for the transportation of iron ore. They are:

Iron Ore—\$2 a gross ton from the head of Lake Superior to lower lake ports; \$1.80, Marquette to lower lake ports; \$1.50, from Escanaba to Lake Erie ports; \$1.20, Escanaba to Chicago District ports.

Semifinished Steel . . .

Semifinished Prices, Page 134

The national steel ingot rate rose 1 point to 48 per cent of capacity last week, reversing its trend of the past several weeks.

While the news is encouraging, it's too early to tell whether the long predicted turn is here. Most observers prefer to "wait and see" since operations at producing points still show a mixed trend.

U. S. Steel Corp.'s Columbia-Geneva Steel Div. will close down its Torrance, Calif., rolling mill in late June for a two-week vacation period. At the same time, open hearth furnaces at Torrance will be down for three weeks.

Lone Star Steel Co. closed down the open hearth department at its East Texas plant May 1. President E. B. Germany says sales and revenues have been severely curtailed by depressed conditions in the oil and gas industries.

(Please turn to Page 151)

Iron and Steel Scrap

Consumer prices per gross ton, except as otherwise noted, including brokers' commission, as reported to STEEL, Apr. 30, 1958. Changes shown in italics.

STEELMAKING SCRAP COMPOSITE

Apr. 30	\$31.83
Apr. 23	32.83
Mar. Avg.	35.83
Apr. 1957	43.57
Apr. 1953	42.88

Based on No. 1 heavy melting grade at Pittsburgh, Chicago, and eastern Pennsylvania.

PITTSBURGH

No. 1 heavy melting	31.00-32.00
No. 2 heavy melting	28.00-29.00
No. 1 dealer bundles	31.00-32.00
No. 2 bundles	24.00-25.00
No. 1 busheling	32.00-33.00
No. 1 factory bundles	34.00-35.00
Machine shop turnings	13.00-14.00
Mixed borings, turnings	13.00-14.00
Short shovel turnings	17.00-18.00
Cast iron borings	17.00-18.00
Cut structurals:	
2 ft and under	37.00-38.00
3 ft lengths	35.00-36.00
Heavy turnings	28.00-29.00
Punchings & plate scrap	35.00-36.00
Electric furnace bundles	37.00-38.00

Cast Iron Grades

No. 1 cupola	40.00-41.00
Stove plate	40.00-41.00
Unstripped motor blocks	23.00-24.00
Clean auto cast	40.00-41.00
Drop broken machinery	43.00-49.00

Railroad Scrap

No. 1 R.R. heavy melt.	35.00-36.00
Rails, 2 ft and under	53.00-54.00
Rails, 18 in. and under	54.00-55.00
Random rails	50.00-51.00
Railroad specialties	44.00-45.00
Angles, splice bars	47.00-48.00

Stainless Steel Scrap

18-8 bundles & solids	170.00-175.00
18-8 turnings	100.00-105.00
430 bundles & solids	110.00-115.00
430 turnings	50.00-52.00

CHICAGO

No. 1 heavy melt, indus.	31.00-32.00
No. 1 heavy melt, dealer	27.00-28.00
No. 2 heavy melting	26.00-27.00
No. 1 factory bundles	33.00-34.00
No. 1 dealer bundles	28.00-29.00
No. 2 bundles	21.00-22.00
No. 1 busheling, indus.	29.00-31.00
No. 1 busheling, dealer	27.00-28.00
Machine shop turnings	13.00-14.00
Mixed borings, turnings	15.00-16.00
Short shovel turnings	15.00-16.00
Cast iron borings	15.00-16.00
Cut structurals, 3 ft	35.00-36.00
Punchings & plate scrap	37.00-38.00

Cast Iron Grades

No. 1 cupola	38.00-39.00
Stove plate	35.00-36.00
Unstripped motor blocks	30.00-31.00
Clean auto cast	43.00-44.00
Drop broken machinery	43.00-44.00

Railroad Scrap

No. 1 R.R. heavy melt.	33.00-34.00
R.R. malleable	46.00-47.00
Rails, 2 ft and under	46.00-47.00
Rails, 18 in. and under	47.00-48.00
Angles, splice bars	44.00-45.00
Axles	50.00-51.00
Rails, rerolling	48.00-49.00

Stainless Steel Scrap

18-8 bundles & solids	160.00-165.00
18-8 turnings	85.00-95.00
430 bundles & solids	85.00-95.00
430 turnings	45.00-50.00

YOUNGSTOWN

No. 1 heavy melting	32.00-33.00
No. 2 heavy melting	22.00-23.00
No. 1 busheling	32.00-33.00
No. 1 bundles	29.00-30.00
No. 2 bundles	21.00-22.00
Machine shop turnings	9.00-10.00
Short shovel turnings	13.00-14.00
Cast iron borings	13.00-14.00
Low phos.	34.00-35.00
Electric furnace bundles	33.00-34.00

Railroad Scrap

No. 1 R.R. heavy melt.	35.00-36.00
------------------------	-------------

CLEVELAND

No. 1 heavy melting	29.00-30.00
No. 2 heavy melting	19.00-20.00
No. 1 factory bundles	31.00-32.00
No. 1 bundles	29.00-30.00
No. 2 bundles	20.00-21.00
No. 1 busheling	29.00-30.00
Machine shop turnings	7.00-8.00
Short shovel turnings	11.00-12.00
Mixed borings, turnings	11.00-12.00
Cast iron borings	11.00-12.00
Cut foundry steel	34.00-35.00
Cut structurals, plates	
2 ft and under	35.00-36.00
Low phos, punchings & plate	30.00-31.00
Alloy free, short shovel turnings	16.00-17.00
Electric furnace bundles	30.00-31.00

Cast Iron Grades

No. 1 cupola	42.00-43.00
Charging box cast	33.00-34.00
Heavy breakable cast	33.00-34.00
Stove plate	42.00-43.00
Unstripped motor blocks	25.00-26.00
Brake shoes	33.00-34.00
Clean auto cast	42.00-43.00
Burnt cast	30.00-31.00
Drop broken machinery	47.00-48.00

Railroad Scrap

R.R. malleable	60.00-61.00
Rails, 2 ft and under	56.00-57.00
Rails, 18 in. and under	57.00-58.00
Rails, random lengths	49.00-50.00
Cast steel	44.00-45.00
Railroad specialties	47.00-48.00
Uncut tires	40.00-41.00
Angles, splice bars	46.00-47.00
Rails, rerolling	51.00-52.00

Stainless Steel

(Brokers' buying prices; f.o.b. shipping point)

18-8 bundles, solids	160.00-165.00
18-8 turnings	90.00-95.00
430 clips, bundles, solids	75.00-80.00
430 turnings	40.00-50.00

ST. LOUIS

(Brokers' buying prices)

No. 1 heavy melting	32.00
No. 2 heavy melting	30.00
No. 1 bundles	32.00
No. 2 bundles	23.00
No. 1 busheling	32.00
Machine shop turnings	16.00
Short shovel turnings	18.00

Cast Iron Grades

No. 1 cupola	40.00
Charging box cast	33.00
Heavy breakable cast	33.00
Unstripped motor blocks	34.00
Clean auto cast	44.00
Stove plate	37.00

Railroad Scrap

No. 1 R.R. heavy melt.	35.00
Rails, 18 in. and under	50.00
Rails, random lengths	44.00
Rails, rerolling	53.00
Angles, splice bars	45.00

BIRMINGHAM

No. 1 heavy melting	30.00-31.00
No. 2 heavy melting	25.00-26.00
No. 1 bundles	30.00-31.00
No. 2 bundles	18.00-19.00
No. 1 busheling	30.00-31.00
Cast iron borings	12.00-13.00
Machine shop turnings	22.00-23.00
Short shovel turnings	23.00-24.00
Bar crops and plates	37.00-38.00
Structurals & plates	36.00-37.00
Electric furnace bundles	35.00-36.00
Electric furnace:	
2 ft and under	34.00-35.00
3 ft and under	33.00-34.00

Cast Iron Grades

No. 1 cupola	48.00-49.00
Stove plate	48.00-49.00
Unstripped motor blocks	37.00-38.00
Charging box cast	22.00-23.00
No. 1 wheels	34.00-35.00

Railroad Scrap

No. 1 R.R. heavy melt.	31.00-32.00
Rails, 18 in. and under	47.00-48.00
Rails, rerolling	45.00-46.00
Rails, random lengths	41.00-42.00
Angles, splice bars	37.00-38.00

PHILADELPHIA

No. 1 heavy melting	34.00-35.00
No. 2 heavy melting	31.00
No. 1 bundles	34.00-35.00
No. 2 bundles	24.00
No. 1 busheling	34.00-35.00
Electric furnace bundles	36.00
Mixed borings, turnings	16.00+
Short shovel turnings	18.00
Machine shop turnings	15.00
Heavy turnings	29.00
Structural & plate	39.00-40.00
Couplers, springs, wheels	43.50
Rail crops, 2 ft. & under	56.00-58.00

Cast Iron Grades

No. 1 cupola	39.00
Heavy breakable cast	42.00
Malleable	58.00-59.00
Drop broken machinery	47.00-48.00

NEW YORK

(Brokers' buying prices)

No. 1 heavy melting	29.00-30.00
No. 2 heavy melting	25.00-26.00
No. 1 bundles	29.00-30.00
No. 2 bundles	16.00-17.00
Machine shop turnings	8.00-9.00+
Mixed borings, turnings	9.00-10.00+
Short shovel turnings	11.00-12.00+
Low phos (structurals & plates)	32.00-33.00

Cast Iron Grades

No. 1 cupola	35.00-36.00
Unstripped motor blocks	24.00-25.00
Heavy breakable	33.00-34.00

Stainless Steel

18-8 sheets, clips, solids	135.00-140.00
18-8 borings, turnings	45.00-50.00
410 sheets, clips, solids	50.00-55.00
430 sheets, clips, solids	65.00-70.00

BUFFALO

No. 1 heavy melting	26.00-27.00
No. 2 heavy melting	24.00-25.00
No. 1 bundles	26.00-27.00
No. 2 bundles	22.00-23.00
No. 1 busheling	26.00-27.00
Mixed borings, turnings	13.00-14.00
Machine shop turnings	10.00-11.00
Short shovel turnings	14.00-15.00
Cast iron borings	13.00-14.00
Low phos, structurals and plate, 5 ft and under	31.00-32.00
2 ft and under	35.00-36.00

Cast Iron Grades

(F.o.b. shipping point)

No. 1 cupola	39.00-40.00
No. 1 machinery	43.00-44.00

Railroad Scrap

Rails, random lengths	45.00-46.00
Rails, 3 ft and under	51.00-52.00
Railroad specialties	35.00-36.00

CINCINNATI

(Brokers' buying prices; f.o.b. shipping point)

No. 1 heavy melting	28.50-29.50
No. 2 heavy melting	25.50-26.50
No. 1 bundles	28.50-29.50
No. 2 bundles	19.00-20.00
No. 1 busheling	28.50-29.50
Machine shop turnings	12.00-13.00
Mixed borings, turnings	11.00-12.00
Short shovel turnings	14.00-15.00
Cast iron borings	11.00-12.00
Low phos. 18 in.	36.00-37.00

Cast Iron Grades

No. 1 cupola	38.00-39.00
Heavy breakable cast	32.00-33.00
Charging box cast	32.00-33.00
Drop broken machinery	45.00-46.00

Railroad Scrap

No. 1 R.R. heavy melt.	33.00-34.00
Rails, 18 in. and under	52.00-53.00
Rails, random lengths	43.00-44.00

HOUSTON

(Brokers' buying prices; f.o.b. cars)	
No. 1 heavy melting	32.00+
No. 2 heavy melting	30.00+
No. 2 bundles	22.00+
Machine shop turnings	15.00+
Crushed turnings	19.00+
Low phos. plates, structurals	36.00+

Cast Iron Grades

No. 1 cupola	38.00+
Heavy breakable	30.00+
Unstripped motor blocks	33.50

Railroad Scrap

No. 1 R.R. heavy melt.	34.00+
------------------------	--------

BOSTON

(Brokers' buying prices; f.o.b. shipping point)

No. 1 heavy melting	23.00-24.00
No. 2 heavy melting	19.00-20.00
No. 1 bundles	23.00-24.00
No. 2 bundles	14.00-15.00
No. 1 busheling	23.00-24.00
Machine shop turnings	5.00-6.00+
Mixed borings, turnings	5.00-6.00+
Short shovel turnings	6.00-7.00+
No. 1 cast	28.00-29.00
Mixed cupola cast	28.00-29.00
No. 1 machinery cast	32.00-33.00

DETROIT

(Brokers' buying prices; f.o.b. shipping point)

No. 1 heavy melting	20.00-21.00+
No. 2 heavy melting	16.00-17.00+
No. 1 bundles	21.00-22.00+
No. 2 bundles	12.00-13.00+
No. 1 busheling	20.00-21.00+
Machine shop turnings	5.00-6.00+
Mixed borings, turnings	6.00-7.00+
Short shovel turnings	7.00-8.00+
Punchings & plate	25.00-26.00+

Cast Iron Grades

No. 1 cupola	27.00-28.00+
Stove plate	22.00-23.00+
Charging box cast	21.00-22.00+
Heavy breakable	20.00-21.00+
Unstripped motor blocks	11.00-12.00+
Clean auto cast	28.00-29.00+

SEATTLE

No. 1 heavy melting	27.00+
No. 2 heavy melting	25.00+
No. 1 bundles	21.00+
No. 2 bundles	20.00+
Machine shop turnings	16.00+
Mixed borings, turnings	16.00+
Electric furnace No. 1	38.00+

Cast Iron Grades

No. 1 cupola	31.00+
Heavy breakable cast	28.00+
Unstripped motor blocks	23.00+
Stove plate (f.o.b. plant)	21.00+

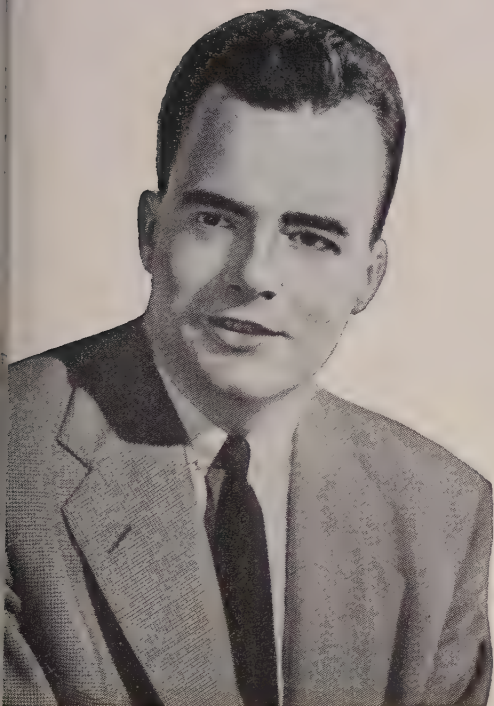
LOS ANGELES

No. 1 heavy melting	34.00+
No. 2 heavy melting	32.00+
No. 1 bundles	30.00+
No. 2 bundles	22.00+
Machine shop turnings	9.00+
Shoveling turnings	11.00+
Cast iron borings	11.00+
Cut structurals and plate 1 ft and under	45.00+

Cast Iron Grades

(F.o.b. shipping point)

specialized OES BUSINESS PUBLICATION ADVERTISING HELP SALESMEN?



Jack Hegarty
Texas Instruments
Incorporated
Sells to industry

says Mr. Hegarty:

No one is in a better position to give a hard-boiled, practical answer to this question than the men who spend their working lives on the sales front...the men the ads are supposed to help...the men who sell.

Here is the statement of a salesman who knows what advertising does for him when it appears in the industrial, trade or professional publications that serve the specialized markets to which he sells:

"I sell semiconductors and other components to original equipment manufacturers in the electronics field. With the tremendous expansion in the electronic industry today, one of our problems is prompt coverage of the market when a new or improved device is announced. I can contact all my larger accounts within a few days, but it takes considerable time to cover the many smaller accounts.

"That's one of the reasons I think our advertising in business publications is so important. It covers all my prospects, large and small, and gets the story of our products to all three groups that can influence purchases—the engineers, the purchasing agents and top management. In some accounts 50 or 60 engineers will attend a meeting. However, there are still many decision-making personnel who can't attend because of other demands on their time. But I know that they will get our story from our advertising.

"On cold calls, many times my selling effort is greatly assisted by the 'pre-selling' of our advertising and it seems to me that advertising often gets me an entree at a higher level than I can usually get on cold calls.

"It helps in other ways, too. For instance, we get inquiries for applications and devices that haven't been developed by our company. Prospects read the advertising, get clues, then contact us. In one case we ran an ad that basically showed a specification sheet on a new component. On one inquiry I followed up, the engineer had the magazine open on his desk right at our ad. He asked me, 'Can you meet this spec?' It was different—but, by some specialized design work, something we could do. I secured a first release order for over \$70,000 just from this one inquiry.

"While my division of our corporation had first established its name in the industry on the basis of its work in semiconductors, we also manufacture many other components. They are in competition with units of companies longer established than we are. Here our advertising helps establish our name as a progressive company with a dependable reputation, good to deal with."

Ask your own salesmen what your company's business publication advertising does for them. If their answers are generally favorable, you can be sure that it is really helping them sell. If too many answers are negative, it could well pay you to review your advertising objectives—and to make sure the publications that carry your advertising are read by the men who must be sold.

How salesmen use their companies' advertising to get more business

Here's a useful package of ideas for the sales manager, advertising manager or agency man who would like to get more horsepower out of his advertising. Send for a free copy of the pocket size booklet which reports the successful methods employed by eleven salesmen who tell how they get more value out of their companies' business publication advertising.

HOW
SALESMEN
USE
BUSINESS
PUBLICATION
ADVERTISING
IN THEIR
SELLING

You can be sure that more of your salesmen will use your advertising after they read how others get business through these simple methods.

The coupon is for your convenience in sending for your free copy.

NATIONAL BUSINESS PUBLICATIONS, INC.



...each of which serves a specialized market in a specific industry, trade or profession.

NATIONAL BUSINESS PUBLICATIONS, INC. Department 12D

1413 K Street, N. W.
Washington 5, D. C.

STERLING 3-7533

Please send me a free copy of the NBP booklet
"How Salesmen Use Business Publication
Advertising in Their Selling."

Name

Title

Company

Street Address

City Zone State

First Quarter Profits Off

Lack of demand and lower prices combine to put earnings below what they were last year. Copper raised 0.25 cent a pound by custom smelters

Nonferrous Metal Prices, Pages 150 & 151

NET profits of nonferrous companies in the first quarter were sharply below what they were in the same period of 1957.

Why—Two major reasons for the slump: 1. A falloff in sales due to the recession. 2. A drop in prices brought about by less demand and too much production. For example: At the end of 1957's first quarter, primary copper was quoted at 32 cents a pound, zinc at 13.5 cents, and lead at 16 cents. Prices now are 25 cents, 10 cents, and 13 cents. Complicating the profit picture is the fact that costs have been steadily rising.

Examples — Here's how profits shaped up in the first quarter for ten companies:

American Smelting & Refining Co. reported first quarter estimated earnings of \$4 million, compared with \$8,249,000 in the same period last year; Calumet & Hecla Inc., \$396,001, compared with \$635,711; Copper Range Co., \$883,031, compared with \$1,073,296; National Lead Co., \$8,952,326, compared with \$14,772,815; American Zinc, Lead & Smelting Co., \$183,213, compared with \$585,665.

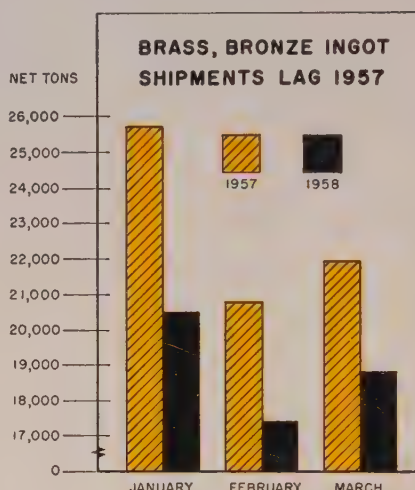
Kennecott Copper Corp., \$11,651,594, compared with \$27,785,579; Aluminum Co. of America, \$11,458,810, compared with \$18,594,086; Aluminium Ltd., \$5.3 million (estimated), compared with \$15 million; Kaiser Aluminum & Chemical Corp., \$6,419,000, compared with \$8,267,000.

One of the few firms to show a gain was Reynolds Metals Co. which reported first quarter profits of \$9,910,345, compared with \$9,880,571 last year.

More Nickel Cutbacks

International Nickel Co. of Canada Ltd. began trimming Canadian nickel output by 10 per

cent (around 1000 tons a month) this week. It is the second such move by the company this year. In March, production was cut 10 per cent, or 1250 tons a month. This puts Inco's production at an annual rate of about 125,000 tons.



Source: Defense Council of the Ingot Brass & Bronze Industry.

Last year the company produced at the rate of 147,500 tons.

Stocks in the hands of Inco and the U. S. government stand at over 52,500 tons (excluding stockpile). Inco says even at the new production rate these stocks will probably continue to climb.

Reason: Free World consumption in the first quarter was at an estimated yearly rate of 177,500 tons.

But even with Inco's cutbacks, Free World production rate should be around 225,000 tons.

Custom Smelters Up

A continuing level of good business has encouraged custom smelters to boost their copper price 0.25 cent a pound to 23.75 cents. Observers say this increased demand is mainly at the expense of primary producers (who are quoting 25 cents) rather than signifying a revival of customer interest. Look for the quotation to be boosted if demand holds at present levels.

Alcoa To Buy Scrap

Aluminum Co. of America has announced two projects designed to boost its sales: 1. A program to purchase self-generated borings and turnings from users of Alcoa screw machine stock. Alcoa will buy scrap in amounts not to exceed 60 per cent of the customer purchases from Alcoa, its distributors, or jobbers. For segregated, clean, and dry quantities of 20,000 lb or more, the price will be 16.5 cents a pound. For quantities less than 20,000 lb the price will be 15.5 cents a pound. Agents are now being selected to operate in major screw machine stock buying centers.

2. Purchase of the Transformer Div. of Automation Industries Inc. for the study of applications of foil and sheet strip windings for transformers and miscellaneous electrical uses. Alcoa says one indication of the potential market here is that coil windings annually consume 232,500 tons of copper magnet wire.

NONFERROUS PRICE RECORD

	Price Apr. 30	Last Change	Previous Price	Mar. Avg	Feb. Avg	Apr., 1957 Avg
Aluminum	24.00	Apr. 1, 1958	26.00	26.000	26.000	25.000
Copper	23.75-25.00	Apr. 24, 1958	23.50-25.00	24.163	24.298	31.598
Lead	11.80	Apr. 1, 1958	12.80	12.800	12.800	15.800
Magnesium	35.25	Aug. 13, 1956	33.75	35.250	35.250	35.250
Nickel	74.00	Dec. 6, 1956	64.50	74.000	74.000	74.000
Tin	93.75	Apr. 30, 1958	94.25	93.425	93.818	99.276
Zinc	10.00	July 1, 1957	10.50	10.000	10.000	13.500

Quotations in cents per pound based on: COPPER, mean of primary and secondary, deld. Conn. Valley; LEAD, common grade, deld. St. Louis; ZINC, prime western, E. St. Louis; TIN, Straits, deld. New York; NICKEL, electrolytic cathodes, 99.9%, base size at refinery, unpacked; ALUMINUM, primary pig, 99.5+%, f.o.b. shipping point; MAGNESIUM, pig, 99.8%, Velasco, Tex.



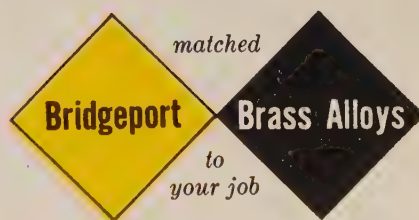
A Different Light on the Subject...

Include Price in the Many Advantages Solid Brass Has Over Other Materials

Many concerns are discovering that the availability of solid brass—at competitive prices—makes it extremely advantageous to use in place of other materials.

For example, parts of the desk lamp shown here made by J. Schrader Co., Cleveland, Ohio, are now being made of Bridgeport F-37 Ultra Fine Grain Brass Strip. Formerly, these same parts were made from a plated product. Now, with solid brass as an active cost competitor, its inherent qualities of workability, beauty and durability over other metals and methods are employed with excellent results.

This is an opportunity that warrants your attention. Your Bridgeport salesman will be glad to show you how solid brass can benefit your product. You'll find that he will work with you in every way. Look into the benefits of solid brass... *including its cost.*



BRIDGEPORT BRASS

Offices in Principal Cities • Conveniently Located Warehouses

Bridgeport Brass Company, Bridgeport 2, Connecticut
In Canada: Noranda Copper and Brass Ltd., Montreal

Nonferrous Metals

Cents per pound, carlots except as otherwise noted.

PRIMARY METALS AND ALLOYS

Aluminum: 99.5%, pigs, 24.00; ingots, 26.10, 10,000 lb or more, f.o.b. shipping point. Freight allowed on 500 lb or more.

Aluminum Alloy: No. 13, 27.90; No. 43, 27.70; No. 195, 28.70; No. 214, 29.50; No. 356, 27.90, 30-lb ingots.

Antimony: R.M.M. brand, 99.5%, 29.00; Lone Star brand, 29.50, f.o.b. Laredo, Tex., in bulk. Foreign brands, 99.5%, 23.50-24.50, New York, duty paid, 10,000 lb or more.

Beryllium: 97% lump or beads, \$71.50 per lb, f.o.b. Cleveland or Reading, Pa.

Beryllium Aluminum: 5% Be, \$74.75 per lb of contained Be, with balance as Al at market price, f.o.b. shipping point.

Beryllium Copper: 3.75-4.25% Be, \$43 per lb of contained Be, with balance as Cu at market price on shipment date, f.o.b. shipping point.

Bismuth: \$2.25 per ton, ton lots.

Cadmium: Sticks and bars, \$1.55 per lb deld.

Cobalt: 97-99%, \$2.00 per lb for 550-lb keg; \$2.02 per lb for 100 lb case; \$2.07 per lb under 100 lb.

Columbium: Powder, \$55-90 per lb, nom.

Copper: Electrolytic, 25.00 deld.; custom smelters, 23.75; lake, 25.00 deld.; fire refined, 24.75 deld.

Germanium: First reduction, \$179.17-197.31 per lb; intrinsic grade, \$197.31-220 per lb, depending on quantity.

Gold: U. S. Treasury, \$35 per oz.

Indium: 99.9%, \$2.25 per troy oz.

Iridium: \$70-90 nom. per troy oz.

Lead: Common, 11.80; chemical, 11.90; corroding, 11.90, St. Louis, New York basis, add 0.20.

Lithium: 98 + %, 50-100 lb, cups or ingots, \$12; rod, \$15; shot or wire, \$16. 100-500 lb, cups or ingots, \$10.50; rod, \$14; shot or wire \$15, f.o.b. Minneapolis.

Magnesium: Pig, 35.25; ingot, 36.00 f.o.b. Velasco, Tex.; 12 in. thick, 59.00 f.o.b. Madison, Ill.

Magnesium Alloys: AZ91A (diecasting), 40.75 deld.; AZ63A, AZ92A, AZ91C (sand casting), 40.75, f.o.b. Velasco, Tex.

Mercury: Open market, spot, New York, \$230-233 per 76-lb flask.

Molybdenum: Unalloyed, turned extrusions, 3.75-5.75 in. round, \$9.60 per lb in lots of 2500 lb or more, f.o.b. Detroit.

Nickel: Electrolytic cathodes, sheets (4 x 4 in. and larger), unpacked, 74.00; 10-lb pigs, unpacked, 78.25; "XX" nickel shot, 779.50; "F" nickel shot for addition to cast iron, 74.50; "F" nickel, 5 lb ingots in kegs for addition to cast iron, 75.50. Prices f.o.b. Port Colborne, Ont., including import duty, New York basis, add 1.01. Nickel oxide sinter, 71.25 per lb of nickel content before 1 cent freight allowance, f.o.b. Copper Cliff, Ont.

Osmium: \$70-100 per troy oz nom.

Palladium: \$19-21 per troy oz.

Platinum: \$65-75 per troy oz from refineries.

Radium: \$16-21.50 per mg radium content, depending on quantity.

Rhodium: \$118-125 per troy oz.

Ruthenium: \$45-55 per troy oz.

Selenium: \$7.00 per lb, commercial grade.

Silver: Open market, 88.625 per troy oz.

Sodium: 16.50, c.i.; 17.00 l.c.l.

Tantalum: Rod, \$60 per lb; sheet, \$55 per lb.

Tellurium: \$1.65-1.85 per lb.

Thallium: \$7.50 per lb.

Tin: Straits, N. Y., spot and prompt, 93.75.

Titanium: Sponge, 99.3 + %, grade A-1 ductile (0.3% Fe max.), \$2.05; grade A-2 (0.5% Fe max.), \$1.85 per lb.

Tungsten: Powder, 98.8%, carbon reduced. 1000-lb lots, \$3.15 per lb nom., f.o.b. shipping point; less than 1000 lb, add 15.00; 99 + % hydrogen reduced, \$3.85.

Zinc: Prime Western, 10.00; brass special, 10.25; intermediate, 10.50, East St. Louis, freight allowed over 0.50 per lb, New York basis, add 0.50. High grade, 11.00; special high grade, 11.25 deld. Diecasting alloy ingot No. 3, 13.75; No. 2, 14.75; No. 5, 14.25 deld.

Zirconium: Sponge, commercial grade, \$5-10 per lb.

(Note: Chromium, manganese, and silicon metals are listed in ferroalloy section.)

SECONDARY METALS AND ALLOYS

Aluminum Ingot: Piston alloys, 24.00-24.50; No. 12 foundry alloy (No. 2 grade), 21.25-21.50; 5% silicon alloy, 0.60 Cu max., 24.00-24.25; 13 alloy, 0.60 Cu max., 24.00-24.25; 195 alloy, 24.25-25.50; 103 alloy, 21.75. Steel deoxidizing grades, notch bars, granulated or shot: Grade 1, 23.25; grade 2, 21.25; grade 3, 20.00; grade 4, 18.00.

Brass Ingot: Red brass, No. 115, 25.25; tin bronze, No. 225, 34.00, No. 245, 28.75; high-leaded tin bronze, No. 305, 29.25, No. 1 yellow, No. 405, 20.75; manganese bronze, No. 421, 23.00.

Magnesium Alloy Ingot: AZ63A, 37.50; AZ91B, 37.50; AZ91C, 41.25; AZ92A, 37.50.

NONFERROUS PRODUCTS

BERYLLIUM COPPER

(Base prices per lb, plus mill extras, 2000 to 5000 lb; nom. 1.9% Be alloy.) Strip, \$1.80, f.o.b. Temple, Pa., or Reading, Pa.; rod, bar, wire, \$1.78, f.o.b. Temple, Pa.

COPPER WIRE

Bare, soft, f.o.b. eastern mills, 30,000-lb lots, 30.355; l.c.l., 30.98. Weatherproof, 30,000-lb lots, 32.53; l.c.l., 33.28. Magnet wire deld., 38.43, before quantity discounts.

LEAD

(Prices to jobbers, f.o.b. Buffalo, Cleveland, Pittsburgh.) Sheets, full rolls, 140 sq ft or more, \$17.50 per cwt; pipe, full coils, \$17.50 per cwt; traps and bends, list prices plus 30%.

TITANIUM

(Prices per lb, 10,000 lb and over, f.o.b. mill.) Sheets and strip, \$8.50-15.95; sheared mill plate, \$6.00-9.50; wire, \$6.50-11.00; forging billets, \$4.10-4.35; hot-rolled and forged bars, \$5.25-6.35.

ZINC

(Prices per lb, c.i., f.o.b. mill.) Sheets, \$24.00; plate, \$12.50-19.20; H.R. strip, \$12.50-22.90; \$11.00-17.40.

ZIRCONIUM

C.R. strip, \$15.90-31.25; forged or H.R. bars, ribbon zinc in coils, 20.50; plates, 19.00.

NICKEL, MONEL, INCONEL

	"A" Nickel	Monel	Inconel
Sheets, C.R.	126	106	128
Strips, C.R.	124	108	138
Plate, H.R.	120	105	121
Rod, Shapes, H.R.	107	89	109
Seamless Tubes	157	129	200

ALUMINUM

Sheets: 1100, 3003, and 5005 mill finish (30,000 lb base; freight allowed).

Thickness Range, Inches	Flat Sheet	Coiled Sheet
0.249-0.136	41.10-45.60	.....
0.135-0.096	41.60-46.70	.....
0.125-0.096	.....	38.50-39.10
0.095-0.077	42.30-48.50	38.60-39.30
0.076-0.061	42.90-50.80	38.80-40.00
0.060-0.048	43.60-53.10	39.40-41.10
0.047-0.038	44.20-55.90	39.90-32.50
0.037-0.030	44.60-60.90	40.30-44.30
0.029-0.024	45.20-52.70	40.60-45.00
0.023-0.019	46.20-56.10	41.70-43.40
0.018-0.017	47.00-53.40	42.30-44.00
0.016-0.015	47.90-54.30	43.10-44.80
0.014	48.90	44.10-45.80
0.013-0.012	50.10	44.80
0.011	51.10	46.00
0.010-0.0095	52.60	47.40
0.009-0.0085	53.90	48.90
0.008-0.0075	55.50	50.10
0.007	57.00	51.60
0.006	58.60	53.00

BRASS MILL PRICES

MILL PRODUCTS a

	Sheet, Strip, Plate	Rod	Wire	Seamless Tubes
Copper	48.13b	45.36c	.....	48.32
Yellow Brass	42.69	31.03d	43.23	45.80
Low Brass, 80%	44.90	44.84	45.44	47.71
Red Brass, 85%	45.67	45.61	46.21	48.48
Com. Bronze, 90%	46.98	46.92	47.52	49.54
Manganese Bronze	50.81	44.91	55.44	.....
Muntz Metal	45.19	41.00	.....	.....
Naval Brass	47.07	41.38	54.13	50.48
Silicon Bronze	52.84	52.03	52.88	54.77
Nickel Silver, 10%	57.93	60.26	60.26	.....
Phos. Bronze, A-5%	67.17	67.67	67.67	68.85

a. Cents per lb, f.o.b. mill; freight allowed on 500 lb or more. b. Hot-rolled. c. Cold-drawn. d. Free cutting. e. Prices in cents per lb for less than 20,000 lb, f.o.b. shipping point. On lots over 20,000 lb at one time, or any or all kinds of scrap, add 1 cent per lb.

ALUMINUM (continued)

Plates and Circles: Thickness 0.250-3 in., 24-60 in. width or diam., 72-240 in. lengths.	Plate Base	Circle Base
Alloy	41.70	46.50
1100-F, 3003-F	41.70	47.60
5050-F	42.80	49.50
3004-F	43.80	50.20
5052-F	44.40	51.00
6061-T6	44.90	55.40
2024-T4	48.60	64.00
7075-T6*	56.40	.....

*24-48 in. width or diam., 72-180 in. lengths.

Screw Machine Stock: 30,000 lb base. Diam. (in.) or Round—Hexagonal—across flats 2011-T3 2017-T4 2011-T3 2017-T4

Drawn

	0.125	76.20	73.20	.....
0.156	64.20	61.40	.....	.....
0.172	.....	61.40	.....	.....
0.188	64.20	61.40	.....	79.60
0.203	64.20	61.40	.....	.....
0.219-0.234	61.00	59.50	.....	.....
0.250	61.00	59.50	.....	.....
0.266-0.281	61.00	59.50	.....	.....
0.313	61.00	59.50	.....	81.40
0.344	60.50	.....	81.40	.....

Cold-Finished

	0.375-0.547	60.50	59.30	72.80	67.80
0.563-0.688	60.50	59.30	69.10	63.50	60.50
0.719	.....	57.70	.....	.....	.....
0.750-1.000	59.00	57.70	62.90	59.70	57.00
1.063	59.00	57.70	.....	57.60	57.60
1.250-1.500	56.60	55.40	60.80	57.60	57.60

Rollled

	1.563	55.00	53.70	.....
1.625-2.000	54.30	52.90	59.60	55.50
2.063	.....	51.40	.....	.....
2.125-2.500	52.80	51.40	.....	55.50
2.500-3.000	51.20	49.70	.....	55.50
3.250-3.375	.....	49.70	.....	.....

Forging Stock: Round, Class 1, random lengths, diam. 0.688-8 in., "F" temper: 2014, 41.50-54.30; 6061, 40.90-54.30; 7075, 42.90-56.30; 7079, 43.40-56.80.

Pipe: ASA schedule 40, alloy 6063-T6, standard lengths, plain ends, 90,000-lb base, per 100 ft. Nom. Pipe Size (in.)

Nom. Pipe Size (in.)	2	4	6	8
2	\$18.60	.....	.....	.....
4	29.35	157.80	.....	.....
6	39.75	282.95	.....	.....
8	47.50	425.80	.....	.....

Extruded Solid Shapes:

Factor	Alloy 6063-T5	Alloy 6062-T6
9-11	45.40-47.00	58.60-62.80
12-14	45.70-47.20	59.30-63.80
15-17	45.90-47.90	60.50-65.30
18-20	46.50-48.30	62.50-68.10

MAGNESIUM

Sheet and Plate: AZ31B standard grade, 0.32 in., 103.10; 0.031 in., 77.90; 0.125 in., 70.40; 1.88 in., 69.00; 2.50-2.0 in., 67.90. AZ31B spec. grade, 0.032 in., 171.30; 0.031 in., 108.70; 1.25 in., 98.16; 1.88 in., 95.70; 2.50-2.0 in., 93.30. Tread plate, 60-192 in. lengths, 24-72 in. widths; 1.25 in., 74.90; 1.88 in., 71.70-72.70; 2.5-7.5 in., 70.60-71.60. Tooling plate, 25-3.0 in., 73.00.

Extruded Solid Shapes:

Factor	Com. Grade (AZ31C)	Spec. Grade (AZ31B)
6-8	69.60-72.40	84.60-87.40
12-14	70.70-73.00	85.70-88.00
24-26	75.60-76.30	90.60-91.30
36-38	89.20-90.30	104.20-105.30

NONFERROUS SCRAP

DEALER'S BUYING PRICES

(Cents per pound, New York, in ton lots.) **Aluminum:** 1100 clippings, 12.00-12.50; old sheets, 9.00-9.50; borings and turnings, 5.00-5.50.

50; crankcase, 9.00-9.50; industrial castings, 9.00-9.50.

Copper and Brass: No. 1 heavy copper and wire, 18.00-18.50; No. 2 heavy copper and wire, 16.00-16.50; light copper, 14.00-14.50; No. 1 composition red brass, 15.00-15.50; No. 1 composition turnings, 14.00-14.50; new brass clippings, 13.00-13.50; light brass, 8.50-9.00; navy yellow brass, 10.50-11.00; new brass rods, 11.00-11.50; auto radiators, unsweated, 10.00-11.50; cocks and faucets, 12.50-13.00; brass pipe, 12.50-13.00.

Lead: Heavy, 7.50-8.00; battery plates, 2.75-3.00; linotype and stereotype, 9.75-10.25; electrotype, 9.00-9.50; mixed babbitt, 9.75-10.25.

Steel: Clippings, 28.00-29.00; old sheets, 28.00-29.00; turnings, 20.00-23.00; rods, 28.00-29.00.

Nickel: Sheets and clips, 42.00-45.00; rolled rods, 42.00-45.00; turnings, 37.00-40.00; rod ends, 42.00-45.00.

Zinc: Old zinc, 3.00-3.25; new diecast scrap, 1.75-3.00; old diecast scrap, 1.50-1.75.

REFINERS' BUYING PRICES

Prices per pound, carlots, delivered refinery)

Aluminum: 1100 clippings, 15.50-16.25; 3003 clippings, 15.50-16.25; 6151 clippings, 15.50-16.25; 5052 clippings, 15.00-15.75; 2014 clippings, 15.00-15.25; 2017 clippings, 15.00-15.25; 2024 clippings, 15.00-15.25; mixed clippings, 15.00-14.75; old sheets, 11.50-12.25; old cast, 11.50-12.25; clean old cable (free of steel), 11.50-15.25; borings and turnings, 12.00-13.00.

Beryllium Copper: Heavy scrap, 0.020-in. and heavier, not less than 1.5% Be, 51.00; light scrap, 46.00; turnings and borings, 31.00.

Copper and Brass: No. 1 heavy copper and wire, 20.00; No. 2 heavy copper and wire, 18.25; light copper, 16.00; refinery brass (90% copper) per dry copper content, 17.75.

INGOTMAKERS' BUYING PRICES

Copper and Brass: No. 1 heavy copper and wire, 20.00; No. 2 heavy copper and wire, 18.25; light copper, 16.00; No. 1 composition turnings, 17.50; No. 1 composition solids, 18.00; navy yellow brass solids, 12.50; yellow brass turnings, 11.50; radiators, 14.00.

PLATING MATERIALS

F.o.b. shipping point, freight allowed on quantities)

ANODES

Cadmium: Special or patented shapes, \$1.70 per lb.; Flat-rolled, 41.79; oval, 40.00, 5000-10,000 lb; electrodeposited, 31.25, 2000-5000 lb lots; cast, 36.25, 5000-10,000 lb quantities.

Nickel: Depolarized, less than 100 lb, 114.25; 100-499 lb, 112.00; 500-999 lb, 107.50; 1000-999 lb, 105.25; 30,000 lb, 103.00. Carbonized, deduct 3 cents a lb.

Iron: Bar or slab, less than 200 lb, 112.50; 200-99 lb, 111.00; 500-999 lb, 110.50; 1000 lb or more, 110.00.

Lead: Balls, 16.00; flat tops, 16.00; flats, 13.25; ovals, 18.50, ton lots.

CHEMICALS

Cadmium Oxide: \$1.70 per lb in 100-lb drums.
Chromic Acid: 100 lb, 33.30; 500 lb, 32.80; 1000 lb, 32.15; 5000 lb, 31.80; 10,000 lb, 31.30; f.o.b. Detroit.

Copper Cyanide: 100-200 lb, 68.40; 300-900 lb, 66.40; 1000-19,900 lb, 64.40.

Copper Sulphate: 100-1900 lb, 13.70; 2000-5900 lb, 11.70; 6000-11,900 lb, 11.45; 12,000-22,900 lb, 11.20; 23,000 lb or more, 10.70.

Nickel Chloride: 100 lb, 48.50; 200 lb, 46.50; 500 lb, 45.50; 400-999 lb, 43.50; 10,000 lb or more, 40.50.

Nickel Sulphate: 5000-22,000 lb, 33.50; 23,000-5,900 lb, 33.00; 36,000 lb or more, 32.50.

Sodium Cyanide: 100 lb, 27.60; 200 lb, 25.90; 500 lb, 22.90; 1000 lb, 21.90; f.o.b. Detroit.

Sodium Stannate: Less than 100 lb, 75.20; 100-100 lb, 66.20; 700-1900 lb, 63.50; 2000-9900 lb, 61.60; 10,000 lb or more, 60.30.

Tannous Chloride (anhydrous): Less than 25 lb, 164.70; 25 lb, 129.70; 100 lb, 114.70; 400 lb, 112.20; 5200-19,600 lb, 100.00; 20,000 lb or more, 87.80.

Tannous Sulphate: Less than 50 lb, 127.50; 50 lb, 97.50; 100-1900 lb, 95.50; 2000 lb or more, 83.50.

Zinc Cyanide: 100-200 lb, 59.00; 300-900 lb, 57.00.

(Concluded from Page 145)

Colorado Fuel & Iron Corp. resumed production of seamless pipe at its Pueblo Works last week. The mill had been down for repairs since Mar. 23.

Pig Iron . . .

Pig Iron Prices, Page 139

Some pig iron producers are growing a bit apprehensive that sales during the second quarter may not match those recorded in the first three months of the year. Bookings in April showed no improvement over those recorded in March.

Practically no one in the trade expects much foundry activity in the third quarter when holidays and vacations will cut into demand for castings. This leaves only the fourth quarter on which sellers can pin their hopes for improved business.

Movement of pig iron on the Great Lakes is getting off to a much slower start than last year. Only a little barge canal tonnage has been booked so far this season.

Tubular Goods . . .

Tubular Goods Prices, Page 138

Seasonal expansion in construction is stimulating demand for standard pipe, but volume is still disappointing, and the situation in the tubular goods market, over-all, leaves much to be desired from the standpoint of producers.

Expectations are that building requirements will rise steadily over the next several months as the construction season gets into full swing.

Mechanical and pressure tubing bookings are reported somewhat improved. Sluggish utility buying is adversely affecting pressure tubing.

Imports of merchant pipe, 2 in. and under, are heavier along the Atlantic seaboard. Improvement in pipe demand in the East is limited to construction needs, and to some extent to airfield fueling systems.

The outlook for tubular goods demand from the oil country is not promising. Some observers think it will be October before demand begins to recover in this area. E. B. Germany, president, Lone Star Steel Co., though, last week told employees of the company that there are signs of improvement in drilling and the oil business generally, and that many pipeline companies are

"FASTER FROM FOSTER" RAIL
& ALL TRACK EQUIPMENT
Nation's Largest Warehouse Stocks
L. B. FOSTER co.
PITTSBURGH 30 • ATLANTA 8 • NEW YORK 7
CHICAGO 4 • HOUSTON 2 • LOS ANGELES 5

OVERHEAD CRANE
1 SHAW BOX 15 Ton 100' Span
1 P & H 15 Ton 100' Span
1000' Runway A-Frame Mounted
25' Clearance
230 DC Volts. Photographs Available.
GEORGE D. KAPLAN LTD.
801 Bond Street, Elizabeth, N. J.
EL. 2-4216

GET CASH NOW
for your new surplus motors, controls and transformers!
AVAILABLE: NEW MOTORS
Over 5,000 new motors, in stock, from 1/2 HP to 200 HP. Special low prices.
Write, wire or phone collect!
AJAX ELECTRIC MOTOR CORP.
P.O. Box 262, Rochester, N.Y.
Long Distance Phone LD. 132

AUTOMATIC RIVET SETTER TOOLING SUPERVISOR
Townsend Company requires experienced man to head up new A.R.S. facility to be located at their Chicago plant.
Phone or write
H. C. Kornman, Works Mgr.
Townsend Company
New Brighton, Pennsylvania

CLASSIFIED

Help Wanted

— WANTED —
Experienced office man for steel tube distributing office in Metropolitan New York area, with knowledge of steel grades, mill and warehouse pricing and telephone sales. Good opportunity for right man. All replies confidential. Our organization knows of this advertisement. Write Box 662, STEEL, Penton Bldg., Cleveland 13, Ohio.

ROLL PASS DESIGNER—on consultant basis. Must be capable of the layout and design of grooved rolls for both hot and cold rolling of ferrous and nonferrous materials. Thorough rolling practice experience and ability to calculate reductions in area and roll groove design are essential requirements. Address Box 663, STEEL, Penton Bldg., Cleveland 13, Ohio.

Positions Wanted

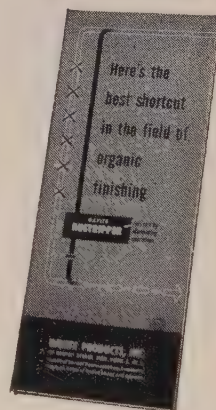
QUALITY CONTROL ENGINEER—Experienced in all phases of quality control, including statistical analysis methods. Married. Best references. College Grad. Write Box 660, STEEL, Penton Bldg., Cleveland 13, Ohio.

WE CAN HELP YOU TO CONTACT
high calibre men to fill specific jobs you have in mind—
Readers of STEEL include men of wide training and experience in the various branches of the metalworking industry. When you have an opportunity to offer, use the Help Wanted columns of STEEL.

Do you need better ways to strip paint?

When tough finishes resist your present stripping methods, you may need help on some of these problems:

- 1 How to strip oil-base paints... synthetic enamels... alkali-resistant plastics... resin-base paints... japans... wrinkle finishes... nitrocellulose lacquers... alkyds... phenolics... ureas.
- 2 How to strip zinc chromate primers without etching aluminum.
- 3 How to strip paint from vertical surfaces and undersurfaces where thin-bodied strippers run off without doing their work.
- 4 How to strip metal parts that are too large to be soaked in tanks.
- 5 How to strip paint, pigment residues, phosphate coatings and rust in one operation.
- 6 How to strip paint from rejects, conveyor chains, racks and hooks in continuous operation.



Oakite has more than a dozen fine stripping materials for these and similar jobs.

FREE For information on problems 1, 2, 3 and 4 ask for a copy of "How to STRIP PAINT". For more on problems 5 and 6 ask for "Here's the best shortcut in the field of organic finishing". Write to Oakite Products, Inc., 34E Rector St., New York 6, N. Y.



Export Division Cable Address: Oakite

Technical Service Representatives in Principal Cities of U. S. and Canada

going ahead with construction plans. Some trade authorities think the pipeline people may not wait for the Supreme Court decision in the Memphis Case to go ahead on pending work.

Generally, it is thought that the Texas oil industry will continue its record low eight-day per month production schedule through May, precluding any immediate upturn in exploration and drilling. The situation is much the same in other oil fields.

Drilling in the U. S. declined last year for the first time since 1949. New wells dropped by 8 per cent to 53,700, and wildcat wells were off 10 per cent to 11,700. The slowdown this year is even more severe, drilling reportedly running as much as 25 per cent behind that of a year ago. Last month, one authority estimated that only 1800 of the nation's 3000 rigs were working.

A proposed freight rate decrease on iron and steel pipe shipped into the Southwest has been temporarily halted by a restraining order granted in Houston by U. S. District Judge Allen B. Hannay at the request of 11 barge lines.

The Interstate Commerce Commission had granted the railroads relief under Sec. 4 of the ICC Act, which would have permitted the carriers to charge lower rates for short hauls. The barge lines contend the new rates would have been at the same level or below those charged by water and motor carriers.

Pipe (steel and wrought iron) shipped from eastern, southern, and midwestern mills to Arkansas, Kansas, Louisiana, Missouri, Oklahoma, and Texas is involved. No date has been set for a final hearing.

One Detroit manufacturer reports orders are for small diameter tubing for appliances, such as refrigerators and home cooling units. Electrical conduit and house construction items are starting to get more active.

About 400 steelworkers returned to work last week at the seamless tube mill of Colorado Fuel & Iron Corp.'s Pueblo Works. It had been down for repairs since Mar. 23. Company executives say production will replace depleted stocks and meet orders for oil country tubular goods.

Advertising Index

Ball-Howe Co.	127
Barma Life Insurance Co.	35
Barna-Standard Engineering Co., The	Inside Back Cover
Black Electric Motor Corporation	151
Black Chemical & Dye Corporation, General Chemical Division	81
Black-Chalmers	60
American Chemical Paint Co.	154
American MonoRail Co.	2
American Nickeloid Co.	78
American Steel & Wire Division, United States Steel Corporation	27
American Welding & Manufacturing Co., The	44
Alameda Wire & Cable Co.	20, 21
Armstrong Machine Co.	128
Archer, J. E., Co., The	110
Baldwin-Lima-Hamilton Corporation, Hamilton Division	9
Armstrong Steel Co.	1
Black & Decker Mfg. Co., The	30, 31
Black, E. W., Co., Rolling Mill Division	13
Black-Warner Industrial Cranes	34
Bridgeport Brass Co.	149
Black & Bascom Rope Co.	141
Black, G. O., Inc.	67
Blackcinnati Milling Machine Co., The	59
Blackford Fuel & Iron Corporation, The 32, 36,	37
Black-Geneva Steel Division, United States Steel Corporation	27
Black & Brass Research Association	8
Black Steel Casting Co.	143
Black-Hammer, Inc.	77
Black-Tube Co.	82
Black Steel Corporation	48
Black Manufacturing Co.	143
Black Co., The	116
Black, Joseph, & Sons, Inc.	128
Black Forge & Steel Corporation	93
Black Standard Oil Co.	68
Black Sterling, Inc.	109
Black, L. B., Co.	151
Black, Peter A., & Co., Inc.	24
Black Chemical Division, Allied Chemical & Dye Corporation	81
Black Brick Co., The	126
Black Lakes Carbon Corporation, Electrode Division	95
Black Division, Baldwin-Lima-Hamilton Corporation	9
Black Furnace Corporation, The	101
Black Manufacturing Co., The	119
Blackfeger Corporation	38
Black, H. M., Co., The	98, 99
Black, John, Inc.	70
Black-Stellite Co., Division of Union Carbide Corporation	11
Black Machine Co., The	Inside Front Cover
Black Co.	72
Black & Scott Co., The	12
Black Gear & Machine Co.	75
Black Manufacturing Co., The	42
Black Steel & Wire Co., Inc.	40, 41
Black & Lamson Machine Co.	64
Black & Laughlin Steel Corporation, Strip Steel Division	122
Black, George D., Ltd.	151
Black Machine Co.	22
Black Bros., Inc.	118
Black Co.	23

McGill Manufacturing Co., Inc.	7
National Acme Co., The	17
National Forge & Ordnance Co.	39
National Steel Corporation	101
National Tube Division, United States Steel Corporation	27
Niagara Blower Co.	118
Northern Engineering Works	115
Oakite Products, Inc.	152
Ohio Crankshaft Co., The	3
Olin Mathieson Chemical Corporation, Aluminum Division	124
Pangborn Corporation	103, 105
Pannier Corporation, The	143
Pennsalt Chemicals Corporation	120, 121
Philadelphia Gear Corporation	50
Pittsburgh Steel Co.	40, 41
Pollock, William B., Co., The	97
Progressive Mfg. Co., The, Division of The Torrington Co.	141
Reading Crane & Hoist Corporation	16
Republic Steel Corporation	14, 15
Robbins & Myers, Inc., Hoist & Crane Division	26
Roebbling's, John A., Sons Corporation, A Subsidiary of The Colorado Fuel & Iron Corporation	32
Ruemelin Mfg. Co.	131
Ryerson, Joseph T., & Son, Inc.	47
Shepard Niles Crane & Hoist Corporation	96
Simonds Abrasive Co., Division of Simonds Saw & Steel Co.	113
Simonds Gear & Mfg. Co., The	71
Standard Conveyor Co.	129
Sumitomo Metal Industries, Ltd.	144
Tennessee Coal & Iron Division, United States Steel Corporation	27
Thomas Machine Manufacturing Co.	131
Thompson Products, Inc., Valve Division	33
Thomson, Judson L., Mfg. Co.	28
Timken Roller Bearing Co., The	Back Cover
Torrington Co., The, The Progressive Mfg. Co. Division	141
Torrington Manufacturing Co., The	10
Tubular Rivet & Stud Co.	114
Union Carbide Corporation, Haynes Stellite Division	11
United Engineering & Foundry Co.	25
United States Rubber Co., Mechanical Goods Division	91
United States Steel Corporation, Subsidiaries	27
United States Steel Export Co.	27
United States Steel Supply Division, United States Steel Corporation	27
Veeder-Root, Inc.	4
Virginia Gear & Machine Corporation	50
Wales Stripit Co.	117
Ward Steel Co.	16
Wheland Co., The	153
Wickwire Spencer Steel Division of The Colorado Fuel & Iron Corporation	36, 37
Yale & Towne Manufacturing Co., The	18, 19
Yoder Co., The	6
Youngstown Sheet & Tube Co., The	29

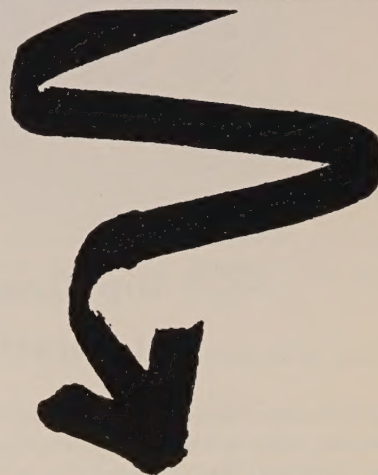
Table of Contents, Page 5

Classified Advertising, Page 151

QUANTITY PRODUCTION OF GREY IRON CASTINGS

ONE OF THE
NATION'S LARGEST
AND MOST MODERN
PRODUCTION
FOUNDRIES

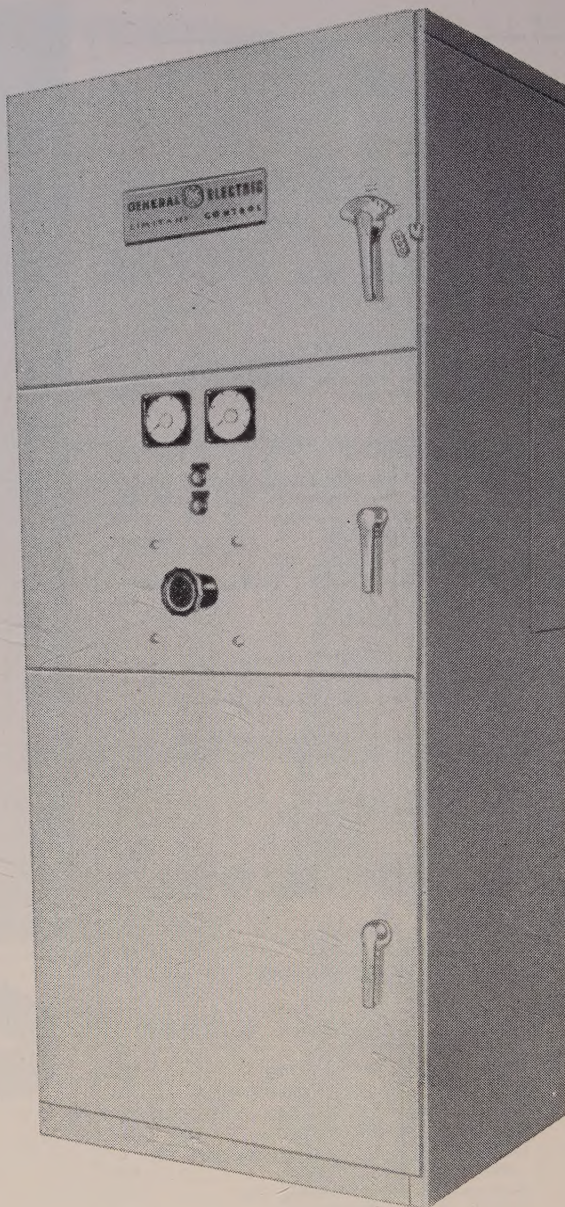
ESTABLISHED 1866
**THE WHELAND
COMPANY**
CHATTANOOGA 2, TENN.



**FIGHT CANCER
WITH A CHECKUP**
(See your doctor)
AND A CHECK
(Send it now)
TO

**AMERICAN
CANCER
SOCIETY**





G-E LIMITAMP CONTROLLERS offer used coordinated control for high voltage motors 2300-4600 v, up to 3000 hp. They are ideally suited for the control of squirrel-cage, synchronous, wound-rotor and multi-speed motors on power systems requiring high interrupting capacity for maximum short-circuit protection.

ACP Dip Granodine Process has improved finishes, cut rejects materially on control enclosures

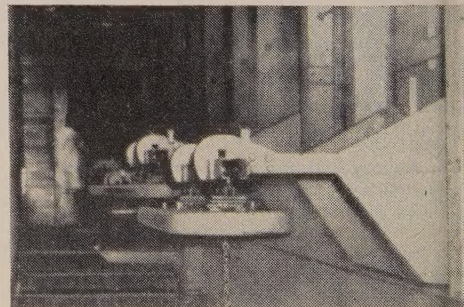
The Industry Control Department of General Electric Company, Roanoke, Va., was looking for an improved method in finishing the steel cabinets and framework for its various control enclosures, such as the Limitamp* panel shown above. An improved prepaint method was needed in order to obtain the high-quality finished paint job required on the enclosures.

General Electric contacted an ACP representative for consultation. He surveyed the operation and at his recommendation ACP Dip GRANODINE 20 was adopted to replace the process in use. The result has been finishes of a clean smooth appearance, besides improved corrosion resistant qualities. In addition, rejects have been materially reduced.

Perhaps you have a similar problem in your finishing department . . . or others that can be solved by using an ACP chemical prepaint treatment. Our application engineers will be glad to help you—feel free to call on us. American Chemical Paint Co., Ambler, Pa.

*Reg. TM of General Electric Co.

GRANODINE is a registered trademark of American Chemical Paint Co.



CHEMICAL TREATMENT PROCESSES like ACP Dip GRANODINE 20 used in this Magnus Aja-Lift Automatic Dip Equipment offer improved corrosion resistance, excellent paint adhesion, durable paint finish.

AMERICAN CHEMICAL PAINT COMPANY, Ambler 19, Pa.
DETROIT, MICH. • ST. JOSEPH, MO. • NILES, CALIF. • WINDSOR, ONT.

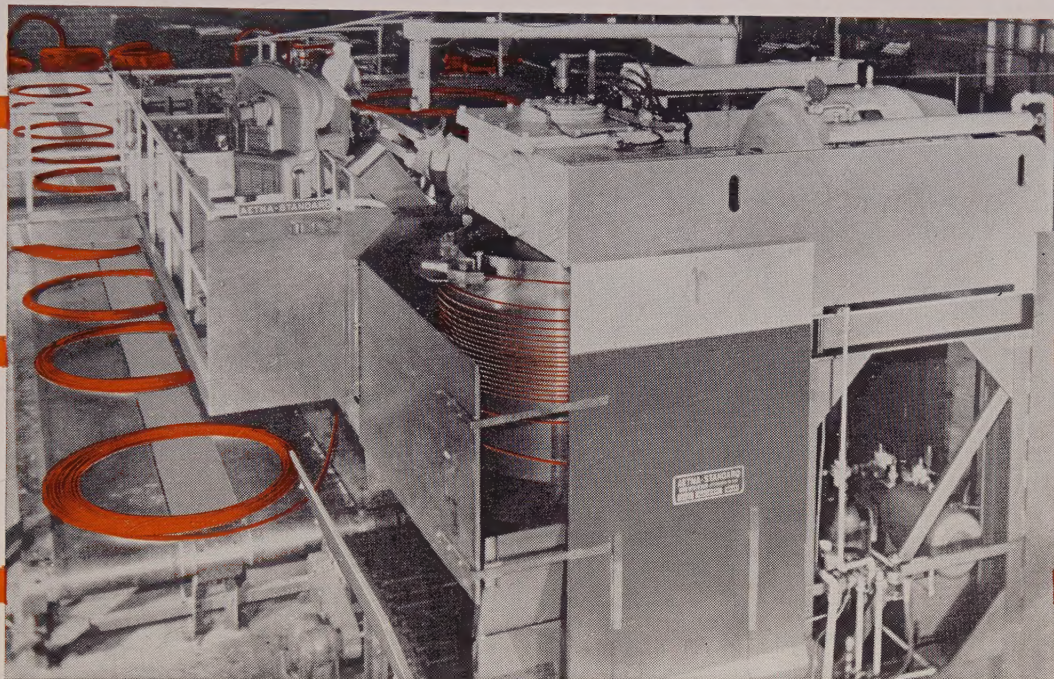
New Chemical Horizons for Industry and Agriculture



ECONOMICAL PRODUCTION

OF THIN WALL, SMALL

DIAMETER TUBING



One of many Bull Block installations made by Aetna-Standard. Aetna's Bull Blocks range in size from 12" in diameter to 60" in diameter at speeds up to 2,000 feet per minute. Types—Horizontal, Inverted or Vertical.

Coil handling is most important for economy in production with a Bull Block. Aetna's engineers have concentrated on the method of moving the tube from the drum after drawing and the method of transferring the material back to the block. The payoff tray, the ease of entry, and the ease of gripping, ungripping and loading add to the economy of operation.

Our hydraulic feed gives absolute accuracy in traversing the die to the drum during drawing. Unique electrical controls give the operator

instant control of speeds from zero to 2,000 feet per minute.

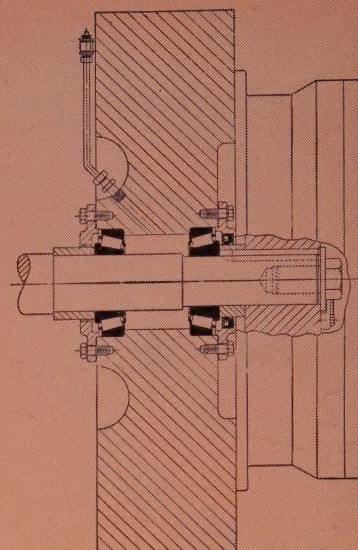
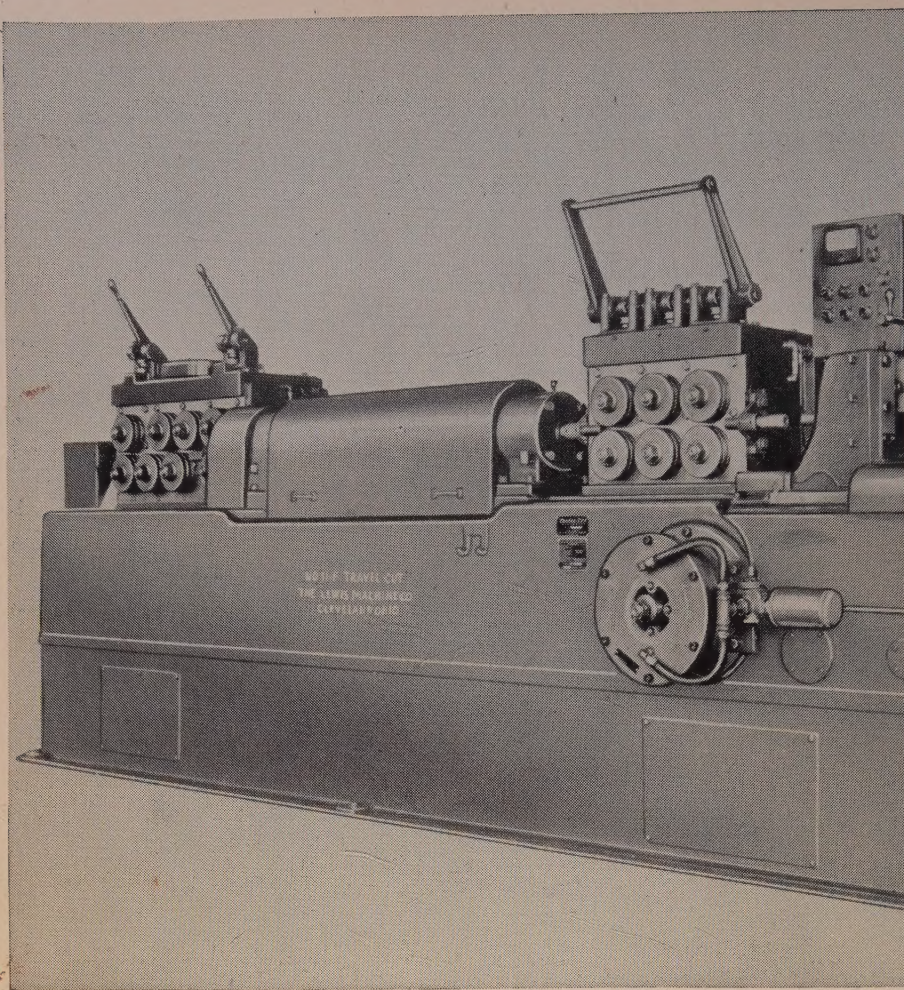
There's nothing new about the use of Bull Blocks. They have been in use for many years. But the design remained unchanged until Aetna-Standard, a pioneer in Drawbenches and other cold draw equipment, completely redesigned the Bull Block and made it a practical unit for high-speed production of small diameter, thin wall tubing. We have made installations for most of the major producers of copper, brass and aluminum tubing.

AETNA • STANDARD

THE AETNA - STANDARD ENGINEERING COMPANY

GENERAL OFFICES: PITTSBURGH, PA. • PLANTS: ELLWOOD CITY, PA., WARREN, OHIO • RESEARCH LABORATORY: AKRON, OHIO

CONTINUOUS GALVANIZING LINES • CONTINUOUS ANNEALING LINES • CONTINUOUS ELECTROLYTIC TINNING LINES • SIDE TRIMMING AND
BEAR LINES AND OTHER FINISHING EQUIPMENT • CONTINUOUS BUTT WELD PIPE MILLS • SEAMLESS TUBE MILLS • DRAWBENCHES AND
OTHER COLD DRAW EQUIPMENT • ROLLS AND CASTINGS • EXTRUDERS, MILLS, PRESSES FOR RUBBER, PLASTIC AND CHEMICAL



How **THE LEWIS MACHINE CO.**, Cleveland, Ohio, mounts the flywheel of its Model 11-F Travel-Cut Wire Straightening and Cutting Machine on Timken bearings to provide stability, dependable performance, economical operation.

How **TIMKEN®** bearings keep flywheel stable on automatic wire straightening and cutting machine

TO take the varying loads of automatic wire straightening and cutting, the bearings in this Lewis Model 11-F Travel-Cut have to be extra tough and virtually friction-free. That's why The Lewis Machine Company uses Timken® tapered roller bearings for the flywheel, feed rolls and drive—38 in all. Timken bearings keep the flywheel stable and rotating freely, position gears and feed rolls accurately even under heavy loads.

EXTRA LOAD-CARRYING CAPACITY. Full line contact between their rollers and races gives Timken bearings extra load-carrying capacity.

Tapered design lets Timken bearings take *both* radial and thrust loads in any combination. The flywheel doesn't wobble. Gears and feed rolls *stay* in position.

PRACTICALLY FRICTION-FREE PERFORMANCE. Because they're geometrically designed to roll true, and precision-made to live up to their design, Timken bearings virtually eliminate friction. They run smoother, last longer.

NO SHOCK PROBLEMS. Because they're case-carburized, Timken bearings' rollers and races have a hard, wear-resistant surface over a tough, shock-resistant core. They

absorb shocks, reduce maintenance.

That's why it pays to specify bearings trade-marked "TIMKEN". The Timken Roller Bearing Company, Canton 6, Ohio. Canadian plant: St. Thomas, Ont. Cable: "TIMROSCO".



This symbol on a product means its bearings are the best.



TIMKEN

TRADE-MARK REG. U. S. PAT. OFF.

TAPERED ROLLER BEARINGS ROLL THE LOAD